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**ECONOMIC AND INDUSTRIAL AFFAIRS**

**No. 2174**



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# EAST EUROPE REPORT

## ECONOMIC AND INDUSTRIAL AFFAIRS

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ECONOMIC RELATIONS WITH USSR EXAMINED

Sofia IKONOMICHESKA MISUL in Bulgarian No 3, 1981 pp 37-49, signed to press on 26 Feb 81

[Article by Zhak Aroyo: "The April Line and All-Round Rapprochement with the Soviet Union"]

[Text] The April 1956 plenum, which was held on the eve of the total victory of socialist production relations in Bulgaria, became the harbinger of a new historical period in the country's development and laid the beginning of a new line in its policy. The April line is a line of building a mature socialist society in the Bulgarian People's Republic. The new historical prospects of our country formulated hitherto unknown tasks, raised complex problems and faced the country with the need for essentially new solutions. The party systematically developed the strategy of the new stage in the building of socialism, gradually developed its elements, opened possibilities and earmarked the tactics and specific means for their implementation. For the past 25 years the April line has been proving its accuracy, viability and constructive nature. It is embodied in the real processes of the progressive building of mature socialism and is taking the country closer to the next stage--the stage of transition to communism.

I

In the area of international economic cooperation and of the active involvement of Bulgaria in the international socialist division of labor, the April party course is a course of all-round rapprochement with the Soviet Union, of close cooperation with the socialist countries and of steady intensification of Bulgaria's participation in international economic life. From a relatively closed development, which characterized the initial years of the building of socialism in our country, Bulgaria penetrated profoundly into the international socialist market. This course gradually displayed its actual forms and essential parameters in the course of its consistent development through several stages.

The first of them was defined in the resolutions of the December 1963 BCP Central Committee Plenum, which laid a base for the rapprochement between Bulgaria and the Soviet Union. At the plenum Comrade T. Zhivkov stated that total rapprochement with the Soviet Union is the foundation for the fertile strengthening and development of the state sovereignty of the Bulgarian People's Republic and of its political strength and influence throughout the world and that the economic tie with the land of the soviets will strengthen even further the power of the state

and its economic independence. The course of rapprochement with the Soviet Union gave our development material strength and became a basic factor in building a mature socialist society in the country. Subsequently, at the 10th party congress, the line of rapprochement with the Soviet Union and of close cooperation with the socialist countries was asserted even more emphatically. It was emphasized that the building of a developed socialist society in Bulgaria is impossible without the closest possible political, economic and cultural cooperation and integration with the socialist countries and, particularly, the Soviet Union. The BCP program stipulated that "the mature socialist society offers even more favorable conditions and opportunities...for raising to a qualitatively new level mutual aid, cooperation and integration with the socialist countries. In this respect, friendship and cooperation with the USSR are of decisive significance."<sup>1</sup>

The second step in the consolidation and concretizing of the April line of all-round rapprochement with the Soviet Union and close cooperation with the socialist countries took shape with the decisions of the July 1973 BCP Central Committee Plenum. This plenum, which formulated the basic trends in the development of cooperation with the USSR, described the content of the course of all-round rapprochement with that country and drew basic conclusions regarding the development of the national economy under the conditions of the rapprochement. It was pointed out at the plenum that the general laws in the development of the global socialist system are manifested most extensively through the all-round cooperation and integration between the socialist countries and the Soviet Union. Historical, political, economic and other conditions make this country a link and basic nucleus of multilateral cooperation among socialist countries. The foundations of the general and multilateral cooperation and unified development are laid as a result of the close cooperation of each of the countries with the Soviet Union. This situation is defined by the objective process of production internationalization and the requirements of the contemporary scientific and technical revolution. The plenum stipulated as the main task in the field of international cooperation the need for a new qualitative content in the processes of rapprochement between Bulgaria and the USSR in such a way that our development has the same rhythm as the Soviet Union, identical criteria and joint efforts and coordinated activities in the political, economic, ideological, scientific, cultural and military areas. In other words, as comrade T. Zhivkov metaphorically pointed out, we must act like a single organism supported by a single vascular system.

The July Central Committee plenum called for the economic integration between Bulgaria and the Soviet Union to be such as to link directly and to an ever growing extent our reproduction process with that of the USSR. The purpose is for our national economic complex, while preserving and developing its autonomy, to become functionally and ever more closely unified with the Soviets, based on a single coordinated policy in which the optimum concentration and specialization of our output and high economic effectiveness may be reached. The plenum earmarked the main directions along which the process of economic rapprochement between Bulgaria and the Soviet Union must develop intensively. They cover the most important areas of the production process such as power industry, extracting industry, machine building, chemical industry, transportation and others. The great importance of foreign trade and the need to develop it quickly and dynamically and for the coordination of monetary-financial and price relations with the Soviet Union were emphasized. Particular emphasis was placed on the development of integration in science and technology, the creation of an efficient system of

reciprocal relations and complementing scientific and technical potentials and the elaboration of a joint long-term strategy for the integrated development of basic scientific and technological areas of both countries. The need was indicated to coordinate the operational mechanisms of the two national economies and for the improvement of the reciprocal integrative mechanism. The need to create joint programs for the development of integration in the individual production areas was particularly stressed.

The decisions of the July BCP Central Committee plenum show the way to the intensive economic rapprochement with the Soviet Union, the close and direct interweaving of the two economies and their complementing and creation of prerequisites for their unification. The earmarked processes of cooperation with the Soviet Union reveal the outlines of new deeply qualitative economic processes of strategic importance to Bulgaria's economic development. They are the manifestation and actual implementation of the party's April line of economic cooperation and rapprochement with the USSR.

By the end of the 1970's the decisions of the July BCP Central Committee plenum were practically implemented in the jointly elaborated General Plan for Production Specialization and Cooperation between Bulgaria and the Soviet Union. Essentially, the general plan is a broad program which shows the main directions of the economic rapprochement of our country with the Soviet Union in the 1980's and subsequently. Its content was concretized (and continues to be concretized) through a number of sectorial and other jointly elaborated programs which include precisely determined ways, means, processes and qualitative parameters of economic rapprochement in the respective areas. The implementation of the tasks formulated in the general plan will create a new circumstance in the economic relations between the two countries, a circumstance of the closest possible interweaving of their economic structures.

Economic rapprochement with the Soviet Union does not isolate our country from cooperation with the other socialist countries, nor does it oppose this process. On the contrary, it becomes a material base for an even broader development of close economic relations with the other CEMA-member countries. It is on this basis that Bulgarian output is specializing and concentrating and is acquiring the possibility of modernizing and upgrading production quality and, thus, creating favorable conditions for useful economic cooperation with the other countries. It is well known that international economic relations are as successful, durable and mutually profitable as are equivalent relations among partners. Cooperation with the USSR makes it possible for Bulgarian production to be enhanced and improved. This is a prerequisite for the development and nationalization of its relations with the other countries. Intensive bilateral cooperation with the Soviet Union becomes a prerequisite for the expansion and strengthening of multilateral cooperation within CEMA. This concept is confirmed by the elaboration of long-term multilateral target cooperation programs. Their realistic nature is based, above all, on lasting and profound bilateral relations between each CEMA-member country, on the one hand, and the Soviet Union, on the other.

## II

Under our contemporary conditions the implementation of the April line of increased Bulgarian participation in the international socialist cooperation outlines a number of new aspects. They do not apply to Bulgaria alone or exclusively to its relations with the Soviet Union but, in a number of respects, affect the other



members of the socialist comity. Today economic development has raised integration processes to a higher level. It is creating and demanding an increasing number of new practical methods and raises new requirements. In the area of economic rapprochement between Bulgaria and the Soviet Union several new aspects can be formulated. Added up, they also define its qualitative improvement in the process of the implementation of the April line. The main such aspects may be summed up in the following several propositions:

First, the programmatic nature of economic relations. The economic cooperation programs are not a record of existing relations but outline future processes of cooperation and of the development of new structures and of their complementing and reciprocal coordination. Gradually, they become the base for the closest possible and most direct permanent ties between the countries. A brilliant manifestation of this new characteristic feature of rapprochement with the USSR was the elaboration of the general plan for specialization and cooperation between the two countries for the period through 1990 and their concretizing in the package of sectorial programs.

Second, the comprehensive nature of economic relations. Relations between Bulgaria and the Soviet Union are expanding both horizontally and vertically. They cover simultaneously production and closely related processes of coordinated development of science, technology, transportation and others. Cooperation assumes a multiple-aspect closely synchronized nature.

Third, the scale of reciprocally coordinated cooperation processes. Reciprocal economic relations between the two countries have already gone far beyond conventional foreign trade relations in the course of which available commodity surpluses are traded. They are assuming an organic nature and are becoming ever more direct, covering production, scientific and technical relations, and operating in accordance with the coordinated strategy of development of national economic complexes. Results of the economic relations between the countries are no longer expressed exclusively and strictly in terms of foreign trade results. Foreign trade is merely an intermediary factor of relations. The main effect comes from production, science and technology and the benefits of cooperation based on a coordinated strategy.

Fourth, the original and profound nature of forms of economic integration. This, too, is a new and important aspect, although it is merely at its beginning. As we pointed out, joint plans and programs are being drafted involving a variety of interesting forms of coordination of economic development, such as the coordinated plans for multilateral integration measures and long-term cooperation target programs, which are implemented on a multilateral basis, as well as bilateral long-term target programs with the USSR and others. Joint companies, bureaus and enterprises are set up. Common production, energy, transportation and other systems are organized. Everyone is familiar with the Ilichevsk-Varna transportation line, petroleum and gas pipelines built through joint efforts, the developing unified energy system, the joint design institutes which were set up and other new interesting forms of close cooperation.

Fifth, broadening of the time span of integration. To an increasing extent one-year and five-year cooperation treaties are becoming links of a longer range coordinated development to which they are subordinated and thus become a solid foundation for a guaranteed long-term development of the national economies.

Sixth, the ever greater impact which integration processes have on the development of production relations on the national economies and in international socialist economic relations. The processes of shaping international socialist production relations as a separate system of the appearance and specific development of international socialist ownership, based on the national autonomy of the country's economies, are assuming ever more real forms. A system of international monetary-financial relations is developing and consolidating. Social forms of international cooperation are becoming apparent as a manifestation of the internationalization of production relations.

Seventh, the development of bilateral relations with the Soviet Union and, specifically, between the Soviet Union and Bulgaria, is becoming an ever stronger foundation for the development and strengthening of cooperation between each individual country and the remaining SEMA-member countries, and for the development of multilateral cooperation within the framework of this system.

The new and very characteristic aspects of economic relations between Bulgaria and the USSR go beyond the framework of ordinary economic cooperation. They are acquiring an ever clearer manifestation of deep unifying integration processes which prepare the ground and express and, by themselves, become a factor of comprehensive rapprochement between the two countries, as a qualitatively new phenomenon in the development of integration.

As a phenomenon and concept rapprochement is a new feature in the historical progress of society and the development of political economy. A substantiated description of this phenomenon was provided by Comrade L. Brezhnev at the 25th CPSU Congress.<sup>2</sup> He stated that rapprochement may be characterized as a triple process of equalization of economic levels in the development of the socialist countries; standardization of the basic and most characteristic features of their economic structures and forms of production relations and economic management mechanisms, and the closest possible and organic functional unification of the national economies and the establishment of unified reproduction processes and unified economic structures. These characteristic processes of rapprochement are economically based on the comprehensive and dynamic development of the national economic complexes, their steady growth, structural improvements and increased effectiveness.

The party's April line in the area of international socialist economic cooperation meets in full the requirements for rapprochement and the view of it as a synthetic pattern in our contemporary life. Furthermore, it broadens its content by including in rapprochement processes other areas of social life such as politics, culture, defense and so on. In this sense, it considers it as a broad and expanding process of all-round rapprochement between Bulgaria and the Soviet Union, between the two countries, the two nations and the two national economic complexes.

### III

The party's April line of all-round rapprochement between Bulgaria and the USSR and of intensifying cooperation with the other SEMA-member countries created conditions for our country to participate actively in the extensive development of socialist integration functions and their advancement and establishment in this part of economic life. The development of such functions, in turn, is contributing to Bulgaria's dynamic progress and to increasing the effectiveness of its public economy and the solution of the complex economic problems of our time.



The structural function of socialist integration was the one which developed most intensively. Economic rapprochement between Bulgaria and the Soviet Union and integration with the remaining CEMA-member countries created actual material prerequisites for profound and highly effective structural changes in the material and technical foundations of our national economy, the modernizing of the sectorial structure and its ascension to the level of the highly developed countries in the world. Between 1960 and 1979--the period during which the beneficial April line was being implemented in all areas of our economic life--the share of industry in the public product rose from 58.1 to 67.9 percent; in the national income it rose, respectively, from 47.4 to 60.0 percent. Meanwhile, agriculture--one of the basic Bulgarian economic sectors--lowered its share in the public product from 21.5 to 11.9 percent and in the national income from 26.6 to 14.4 percent. Changes in Bulgaria's foreign trade confirm the significance of foreign economic relations in the posting and implementation of such a profound and progressive structural change in our country's national economy. Within the same period (1960-1979) exports of industrial commodities increased their share in the overall exports of the country from 84.4 to 97.1 percent, while agricultural exports declined from 59.3 to 23.6 percent.<sup>3</sup>

The importance of the foreign trade structural changes in terms of the national economy becomes even clearer by pointing out that exports of industrial commodities of known agricultural origin rose from 25.1 to 73.5 percent, while exports of raw agricultural commodities dropped to 2.9 percent. Particularly indicative are data on changes in the structure of exports of industrial commodities. Whereas in 1960 exports of machine building and metal processing goods accounted for no more than 13.9 percent, in 1979 they had reached 44.5 percent.<sup>4</sup> Meanwhile, the share of machine building and metal processing in overall industrial output rose from 12.4 to 28.8 percent. Similar processes occurred in the chemical industry as well.

Two processes become quite apparent: first, the close synchronizing of the structural changes in domestic production and exports and, second, the faster development of exports compared with the growth of output, both generally and by basic and relatively more effective sector. Both trends prove the active role which foreign economic and, above all, integration processes play in the positive changes taking place in the structure of our national economy.

The effective function of socialist integration or, more specifically, its role of creating conditions for higher national economic effectiveness, developed extensively. Effectiveness is mainly the result of higher labor productivity and of savings in labor and materials in the course of the production process. Rapprochement with the Soviet Union and the development of integration processes with all other SEMA-member countries influence the effectiveness of the national economy in several directions. The main one is related to the structural changes in public production, as we mentioned. This is one of the most essential sources of increasing labor productivity in the national economy as a whole. The increased share of sectors with a relatively high labor productivity leads to an overall increase in the level of labor productivity in the national economy. The data mentioned above concerning this process in our country show that in recent years and in close relation to changes in foreign economic relations it was the production of essentially sectors with a relatively higher labor productivity that increased. This was the main foundation for the increase in the overall effectiveness of the national economy in our country.

Imports of highly productive equipment are having a strong influence on labor productivity as well. The reflection of such imports in our economy may be judged by data on the import of machines and equipment for industrial purposes, which enhance the overall technological level in our country and help to increase its productivity. Between 1960 and 1979 equipment imports in our country rose from 324.8 million foreign exchange leva to 2,732,500,000, or by a factor of more than 8.<sup>5</sup>

Foreign economic relations affect the effectiveness of the national economy also through the training of highly skilled cadres, mainly in higher educational institutions. This influence is proved by data on higher engineering-technical cadres trained abroad. Their number rose from 72 in 1960 to 433 in 1979; all in all, within that period 1,758 engineering-technical cadres were trained abroad. Considerable aid was given in the training of our specialists through other forms of instruction as well as the assignment of highly skilled foreign specialists to our country for the purpose of sharing their experience and training cadres in assembling and operating highly productive equipment. Soviet aid was particularly substantial.

The expansion of the resource function of socialist integration had a major impact on the development of our country. Its essential influence on our economy was determined by the poorer natural resources at its disposal with the simultaneous strong increase in its needs for fuel, raw materials and other resources needed by the national economy. We know what role the Soviet Union played in the solution of this exceptionally important problem in terms of Bulgaria's contemporary development. Thus, for example, imports of fuels, mineral raw materials and metals by our country rose from 179.9 million foreign exchange leva in 1960 to 3,045,200,000 in 1979; their share in the overall imports of the country rose from 23.9 percent (which was already significant) to 28.2 percent.<sup>7</sup> In 1979 alone we imported from the Soviet Union 4.519 billion kilowatt hours of electric power, 4.586 million tons of pig iron, 110,000 tons of sheet steel and many other raw and other materials needed by our economy. In 1979 we imported mineral raw materials, petroleum and materials for the production of goods whose volume was higher by a factor of about 16-17 percent compared with 1960 import levels.<sup>8</sup> We can confidently state that in terms of the resource function the integration between Bulgaria and the USSR has reached its highest development and has become an example of the outstandingly socialist nature of its manifestations. No examples may be found outside the socialist world in which an industrially strongly developed country would satisfy so generously and at such favorable conditions a smaller and less developed country.

The production function of socialist integration developed as well. It expresses most vividly the profound nature of integration processes and broadens our country's participation in the international division of labor. The nature and results of the effect of this function are found in the close interweaving of our national output with the production of other socialist countries, the Soviet Union above all, their reciprocal complementing and the gradual development of functionally consolidated reproduction processes. In the further development of this function, the trend in the process of rapprochement between Bulgaria and the Soviet Union is that of reaching a profound functional unity in the reproduction process of both countries.

Bulgaria's increased participation in the international division of labor proves the development of this function of socialist integration in the development of the Bulgarian economy. It is revealed most completely in the role which foreign economic relations play in the development of the Bulgarian economy. Compared with 1960, in 1979 the national product of our country had risen by 434.1 percent while the national income had risen by 390.2 percent. Meanwhile, Bulgarian exports rose by 973.7 percent. The clearly manifested faster development of exports (which more than doubled within that period) indicates the extent and rapidity with which Bulgaria is becoming part of the international division of labor. In 1979 our country's exports were worth 7,666,800,000 foreign exchange leva; exports totaled 7,363,400,000, while the public product produced was worth 47,364,800 leva and the national income, 17.666 billion leva.<sup>9</sup> A comparison between these data shows (naturally, bearing in mind their conditional nature) that Bulgarian exports account for about 16 percent of the social product and 43 percent of the national income. This indicates the great extent to which our national output is linked to the international market and the role which exports play in the development of our output.

At the present stage in the development of the socialist countries, including Bulgaria, the scientific and technical function of socialist integration assumes a main significance. This applies to one of the most important areas of cooperation among CEMA-member countries, related to the main features of our time--taking extensively into consideration the requirements of the scientific and technical revolution. Bulgaria's integration with the Soviet Union in this area of social life, as well as with the other socialist countries, is extremely necessary, for the independent scientific and technical potential of our country is low while its financial opportunities for the development of scientific research on a broad front are limited. Its development in science and technology can be achieved exclusively on the basis of the strict choice of directions and areas of scientific and technical life in which Bulgaria makes a real contribution. In all other areas the country must become integrated with the other CEMA members. Bulgaria can achieve a proper advance and participate in the work along with the highly developed countries only on the basis of scientific and technical cooperation.

In pursuing the course of scientific and technical integration and in accordance with the Comprehensive Program, our country has already concluded more than 150 agreements in this important area of cooperation. It is participating in the activities of 55 coordination centers and 32 other organizations engaged in the coordination of scientific and technical activities. In the past 5 years Bulgaria joined in the elaboration of 16 problems and 55 topics within the framework of the Coordinated Plan for Multilateral Integration Measures.

The capital-forming function of socialist integration is continuing to operate, although under different conditions. It is related to the role which foreign economic relations and integration processes play in forming the capital assets of the national economy, their updating and their development in accordance with the requirements of technical progress. The rich variety of new labor tools which are applied on a daily basis and used by the highly developed countries in their production process makes the technical facilities available in the production process quite dynamic. To an increasing extent the periods of moral obsolescence of equipment are being reduced, particularly in the latest industrial sectors such as electronics, machine building and so on. The timely replacement of assets with new and more productive ones complicates this problem and requires substantial investments. It is related to the rapid development of technical progress. Today



this cannot be accomplished without integration processes. Bulgaria takes this stipulation into consideration and is extensively developing its foreign economic relations in the area of labor tools. Their importation, mainly from the Soviet Union, makes it possible to resolve one of the severe contradictions in the technical development of our country. In 1979 Bulgaria imported labor tools worth 1,547,700,000 foreign exchange leva, or an increase of almost 469.3 percent compared with the 1960 level. In 1979 imported labor tools accounted for about 27.5 percent of the country's total imports.<sup>10</sup> These figures reveal the process of expansion and renovation of our country's fixed capital, based mainly on integration processes with the Soviet Union and the other socialist countries.

The food supply function of socialist integration, related to the enhancement of the living standard of the nations and the creation of material prerequisites for a socialist way of life, is assuming increasing significance in our time. Although Bulgaria is a country with a developed food industry and agriculture and is in a position to satisfy most of its food requirements, under present circumstances the problem cannot be resolved autarkically and within the framework of the national economy of any separately taken country. Integration in food supplies, although developing relatively more slowly, is necessary. Without it the food problem cannot be resolved completely. Of late, it has been facing individual countries ever more frequently. It has become aggravated and threatens to develop into a social problem unless energetic measures are taken to ensure its resolution. In our country the food problem was not aggravated especially, for the party's Central Committee and the government have been taking measures for its resolution. Here priority is given to the grain and animal husbandry problems. Bulgaria's food exports are small. Between 1960 and 1979 they rose to only 391.0 percent and their share in overall exports declined considerably, from 22.7 percent in 1960 to 9.0 percent in 1979.<sup>11</sup>

#### IV

A number of phenomena in global economic developments are facing today the socialist countries, including Bulgaria, with a number of difficulties and trials. Let us emphasize among them the drastic aggravation of the problem of resources, created by the increased demand for effective fuels and raw materials; the incredibly fast and systematic increase of world prices which, furthermore, has varied greatly for the individual groups of commodities; the protectionism applied by a number of highly developed capitalist countries and the discrimination they have imposed in their trade with the socialist countries; the increasing shortage of a number of energy sources and raw materials and so on. In the case of Bulgaria and the other socialist countries, these phenomena in the global economy were external, objective and, to a certain extent, inevitable. The country was unable to surmount them entirely despite the fast and energetic measures which were taken to prevent their negative influence.

The April principles of state and party work called for the profound and comprehensive study of contradictions and difficulties in economic life, the exposure of their roots and factors in order to surmount them and explained them to the people frankly so that they may be mobilized in the struggle to eliminate them. These principles led our party to penetrate into the essence of contemporary economic phenomena and contradictions in the world and to define their nature, their impact on the national economy and the means for their elimination with a view to launching

an energetic struggle against them. It sought reserves and factors for surmounting contradictions in economic development mainly through upgrading the effectiveness of the national economy and the intensification and advancement of integration with the Soviet Union and the other CEMA-member countries. The development of the internal effectiveness factors required the intensification of foreign economic relations in the way that the development and advancement of foreign economic relations called for the total mobilization of the internal factors of economic growth. The other SEMA-member countries were confronted with the same need.

Today the members of the socialist comity must surmount a relative lagging in some integration sectors so that integration may become an even stronger and more aggressive factor in the economic growth and effectiveness of their national economies. In the course of its development so far integration has had to meet mainly the requirements of the extensive processes in the individual socialist countries. It was engaged essentially in meeting their growing needs for fuels, raw materials, materials and basic equipment. This stage has already been crossed. The socialist comity is progressing toward accelerated intensification which creates new integration problems. The task now is to develop and expand even faster the production of highly effective equipment and of modern and most advanced labor tools and production mechanization and automation facilities. This requires, above all, the intensification of the process of international production specialization and co-operation, directing it to the decisive sectors and turning it into an extensive prerequisite for upgrading its effectiveness. It is very important for international specialization to be developed in depth through the broadening of its machine assembly, spare part and technological aspects. This process can and must lead to the elimination of duplication in the items produced by the individual countries, something which prevents them from fully expanding reciprocal trade and leads to a certain imbalance in economic relations. This will create the opportunity for the full development of the production capacities of the socialist comity and the organization of functional international production systems. The overall solution of this problem indicates ever more strongly the need for the elaboration of a long-term structural policy coordinated among the individual countries, a policy which would clearly outline prospects in the development of the national economies and of foreign economic relations.

It is particularly imperative to broaden scientific and technical cooperation and its international specialization so that its direct ties with the production process may be intensified and that it may become a main factor in further production intensification. Our comity can and should produce most modern equipment related to the development of the new modern production sectors, create prerequisites for the use of comprehensive mechanization and extensive automation of production processes, and become a leading factor in technical progress in the world. The adverse circumstances prevailing on the global capitalist market and the steadily rising prices of highly productive modern equipment force us to seek jointly means for the faster solution of this basic problem of our development, above all within the framework of the socialist comity. The formulation of a long-term scientific and technical policy of CEMA-member countries, closely coordinated with a long-term economic policy, should be subordinated to this requirement.

The intensification of the socialist division of labor calls for the respective development of the cooperation mechanism and its adaptation to the new integration ways and means and processes. As current practices, successes and unresolved



problems show, the main direction must follow the line of the further intensification of coordination of basic parameters in the development of the national economies, their structures, their capital investments for the development of basic and new sectors, the establishment of functional economic complexes and the joint determination of the basic directions of the development and intensification of the international division of labor in science and technology. We must pursue the further utilization of commodity-monetary relations for the stimulation of integration processes and the solution of the most important problems facing the comity. Changes in the functioning and management of the national economic mechanisms will require corresponding changes in the mechanism of cooperation. The economic approach to management will probably expand its effect to the field of international economic relations as well, while economic effectiveness will become the basic criterion of reciprocal integration processes and cost effectiveness will be increasingly applied in international economic relations.

Many of these exceptionally important problems facing the socialist comity are already being resolved. A major step forward was taken with the elaboration and joint adoption of the long-term target cooperation programs. The measures they involve cover the most important areas of economic development and international cooperation. Essentially, they are the extension of the basic stipulations contained in the comprehensive integration program of CEMA-member countries, adopted 10 years ago. A number of other cooperation problems have been included in the bilateral production specialization and cooperation programs, mainly between the Soviet Union and other CEMA-member countries. Quick and energetic steps must be taken for the implementation of these programs which are also the base of the factors which enable us to surmount the aggravation of a number of contradictions in the development of the socialist countries under the influence of global circumstances and of some adverse processes in the national economies and the cooperation among countries.

The development of integration processes and the rapid surmounting of all the circumstances which do not contribute to their further intensification represent a basic external factor in the development of the national economies. The solution of this problem, however, can be achieved only on the basis of the mobilization of internal resources, the surmounting of internal contradictions within the national economies and the creation of an atmosphere of steady economic upsurge. It is only thus that foreign economic relations may be expanded and become a factor of economic growth. Well aware of the main importance of internal economic development factors of the country, our party has reacted to them promptly. At the 1978 National Party Conference it brought up and formulated the main economic contradiction in our economy and earmarked the means for its elimination.

Today our country faces the need for a sharp and quick turn toward economic intensification. A number of circumstances in the country's development emphasize this need. Let us point out, for example, the developing manpower shortage, the growth of production capital intensiveness and material intensiveness, a certain slowdown in the growth rates of labor productivity and, hence, the economic growth of the country, the inadequate development of scientific and technical progress compared with requirements, insufficient production specialization and others. The party has made a profound study of the nature of these phenomena and has exposed their reasons. On this basis the main ways for their elimination over the next few years were established. In this case the only task is to upgrade national economic effectiveness.

The upgrading of social production effectiveness requires, on the one hand, the full mobilization of internal resources and comprehensive, rapid and extensive economy of labor and materials in the national production process. On the other, it requires an overall profound synchronization of internal economic development with foreign economic relations, with the processes of economic rapprochement with the Soviet Union and further integration with the other socialist countries. The difficulties facing our economy and the economies of the other socialist countries cannot be surmounted without the unification of internal and external factors of economic growth. It is precisely this that has become an important prerequisite for the intensification of the international division of labor in the socialist comity and for the finding of new and effective forms of cooperation consistent with modern requirements.

The further development of the socialist comity will require the even greater intensification of integration and the improvement of its forms and control mechanisms. This will be entirely consistent with the objective phenomena of our time and with the basic requirements of the economic laws of socialism. It will contribute to the even fuller utilization of the advantages of the socialist system and to the reaching of its internal objectives.

In following the Leninist April line of economic management, the Bulgarian Communist Party is formulating its policy in the field of foreign economic relations in full harmony with the requirements of our time. It linked the destiny of the country with the members of the socialist comity and directed the development of the economy according to the laws governing the global socialist economy. The April strategy it formulated is that of economic rapprochement with the Soviet Union and close cooperation with SEMA-member countries. It is only on this basis that the internal forces of the national economy can be deployed and that its immediate and more distant objectives achieved.

#### FOOTNOTES

1. "Programa na Bulgarskata Kommunisticheska Partiya" [Program of the Bulgarian Communist Party], Sofia, 1971, p 47.
2. L. Brezhnev, "CC CPSU Accountability Report and the Forthcoming Party Tasks in Domestic and Foreign Policy," Sofia, 1976, p 9.
3. "Statisticheski Godishnik na Narodna Republika Bulgariya, 1980" [Statistical Yearbook of the Bulgarian People's Republic, 1980], pp 139-378.
4. Ibid, pp 378, 379.
5. Ibid, p 371.
6. Ibid, p 439.
7. Ibid, p 381.
8. Ibid, p 404.
9. Ibid, pp 138, 374, 139.
10. Ibid, pp 375-376.
11. Ibid, p 378.

## BULGARIA

### EDITORIAL URGES UNCOMPROMISING STRUGGLE AGAINST ECONOMIC CRIMES

Sofia RABOTNICHESKO DELO in Bulgarian 29 Jul 81 p 1

[Editorial: "Irreconcilability and Strict Control!"]

[Text] The industriousness of our people is legendary. This is a quality which the people have retained to this day as they are building their new life, and as the appearance of our socialist homeland is changing through their dedicated labor, making it more beautiful and richer and making the people's life more prosperous. That is why it is no accident that Comrade Todor Zhivkov emphasized at the 12th BCP Congress that over the past decade we have built yet another, a second Bulgaria. This success is the embodiment of the vital force of our social system and the dynamics with which our country is confidently marching toward its future.

These are not mere words of complacency. Thus, the country's productive capital rose from 33 billion leva in 1970 to about 77 billion leva at the end of 1980. Compared with the Sixth Five-Year Plan, the national income produced in the Seventh Five-Year Plan was 24 billion leva higher. The result of such accomplishments are our prosperity and the systematic satisfaction of the material and spiritual needs of the working people. This principle is an inseparable part of our party's social policy and of its concern for the people.

In our country the people are the only beneficiary of the results of their toil and of the goods they have created. That is why it is our common obligation to protect and increase the national wealth. In this respect, in the past few years the new economic mechanism has proved to be an efficient approach to limiting irresponsibility.

The tremendous majority of people are honest, dedicated and industrious. However, there also exist unconscientious citizens who want unearned income and to prosper at the expense of state property. Carelessness, waste and criminal negligence are allowed in many plants, enterprises, construction projects and fields.

The trend of economic crime in some basic sectors such as trade, agriculture, forestry and industry is alarming.

What are the reasons for this phenomenon, which is alien to our socialist reality and morality? Above all, the poor management, the low conscientiousness and low feeling of responsibility of some people and consumerist feelings. Not least are the insufficient and ineffective control and public tolerance of the violators.

Some cases offer very indicative examples of dulled vigilance, carelessness, amazing trust and economic shortsightedness. The materially liable official at the National Standing Exhibit of the State Committee for Science and Technical Progress was able to appropriate for his own use 108,000 leva with the help of 1,000 fictitious documents despite four financial audits conducted by the internal departmental control organs! Last year unfinished construction worth more than 1.6 million leva was "accounted for" at the Heavy Machine Building Combine in Radomir. Some time ago RABOTNICHESKO DELO published material describing the way managers of warehouses, procurement workers and warehousing personnel of the Wholesale Trade and Comestible Goods enterprises in Plovdiv appropriated for their private use entire trucks filled with goods quite openly.

The fact that there are such cases proves the existence of misconceived tolerance or oversight. A situation has developed in which frequently economic managements seem to feel more responsible for the fulfillment of the production plan than the preservation of the public property, although one is indivisible from the other. The results of departmental control, compared with state control, are lower by a factor of 5-7. There have been cases of bribing auditors who then become accessories to economic crime.

It is true that the activities of state control organs, the Prosecutor's Office and the Ministry of Internal Affairs in the exposure of economic crime are improving steadily. In the Seventh Five-Year Plan the number of exposed cases rose by 56 percent. However, true success can be achieved in this respect by waging the struggle on a broader basis and by nipping the roots of the phenomenon in the bud and taking into consideration social factors, dynamics of interests and needs, level of conscientiousness and others.

The educational work conducted within the labor collectives on the protection of socialist property remains unsatisfactory. The specialized prevention council set up at enterprises and departments sometimes exist almost entirely on paper. The feeling of responsibility on the part of some economic managers has lowered.

In order for such weaknesses to be eliminated strict order must be introduced at work places in plants, enterprises, stores, establishments, everywhere. Each collective must develop a sharpened feeling concerning violators. The role of social control and of reports by working people must be decisively strengthened and new forms of feedback and for the application of moral sanctions must be sought. We must develop the type of control system which will not be influenced by departmental interests. Preventive activities must be synchronized at all levels. Stricter penalties must be imposed for negligence, misappropriations, and economic incompetence, so that the strictness of the penalties must block carelessness and irresponsibility.

The role of the party organs and organizations as the guiding units in the establishment of more effective control, the education of the masses and the transformation of the labor collectives into full owners of socialist property must be clearly enhanced. Direct party control must be strengthened even further.

At the stage of building a mature socialist society in our country the protection of public property assumes particularly great political and ideological significance. It becomes not only a social and moral but a strategic question, for it



determines largely the results of our labor and our future successes. A guarantee for this is found in the high conscientiousness of our people, their moral purity and their industriousness. That is why uncompromising intolerance must be shown toward those who encroach upon socialist property and violate the moral principles of our society. An irreconcilable, systematic and consistent struggle must be waged against them and against manifestations of tolerance and indifference!

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CSO: 2200/137



SLUGGISHNESS OF CONSTRUCTION INDUSTRY QUESTIONED

Sofia OTECHESTVEN FRONT in Bulgarian 31 Jul 81 p 2

[Article by Engineer Zheko Zankov: "Have We Thrown Away the Yardstick of Kol'ov Ficheto?"]

[Text] How was the "Novotel Evropa" built? We would have many specialists if everyone would practice his skill. More productivity from the new equipment!

According to the new economic approach all social activities must be profitable. In construction, however, we frequently come across phenomena which hinder the efficient organization of the work despite the very good conditions provided by the state.

In 1965 Sofstroy had mechanization facilities worth about 8 million leva and employed 10,000 people. In addition to public and consumer service buildings, that year it built about 7,000 housing units, only 2,000 of which based on the large-panel method. The average area was about 80 square meters. In 1979 the Sofstroy DSO [State Economic Trust] had mechanization facilities worth more than 30 million leva and employed about 17,000 people. In addition to public and service buildings, the organization completed and delivered 8,600 housing units of a reduced size of 65 square meters; 6,600 of these were large-panel units.

If we compare the area we would see that with four times more equipment and a 70 percent increase in personnel, in 1979 the output was precisely that of 1965!

With every passing year an ever increasing number of materials, equipment and manpower are used per unit of housing output. The time has come, therefore, to ask ourselves the reason for this stagnation in our construction. Why is it that it is so difficult for global leading experience to enter our country? Why is it that our effectiveness remains quite low?

We had the opportunity to observe the fast and effective construction of the "Novotel Evropa" by a French construction company. Actually, the method it used was quite similar to that of the Bulgarian "wide area monolithic" system. The construction was carried out with Bulgarian materials and the foreign workers were not better trained than ours. Yet, their labor productivity and the quality of their work were far higher than ours. What was the reason for this difference?

Perhaps it was even the fact that the French company used under our conditions a method similar to the Bulgarian "wide area monolithic" system. Meanwhile, we were

trying to apply the Swedish "Albetong" system with extensive imported scaffolding. The Swedish system was designed for areas not prone to earthquakes and for conditions dissimilar to ours.

The accurately chosen construction-structural system, quality designing, rational organization of the work at the construction site and competent technical management were of decisive importance to the successful building of the hotel.

I do not mean by this that we have an insufficient number of specialists. On the contrary, the number of engineers and designers who are not working in their profession for a great variety of reasons is rising with every year. However, the opposite also happens: people with a skill inconsistent with their position are appointed at all levels in construction work.

Between the plan and the first dig. Where does the poor organization begin? The secret of constant digging.

Another phenomenon is the separation of designing from direct production work. This increases superficial designing which is uncoordinated with available materials, mechanization facilities and available manpower.

The separation of designing from execution leads to the following weaknesses:

Lack of qualitatively drafted urban construction solutions with the necessary flow and synchronization of performance of low construction, such as sewer and water lines, heat supplies, road construction, landscaping and others;

Urban construction solutions for high construction are uncoordinated with ground conditions, ground waters, other buildings, number of stories and so on;

High quality blueprints with most competent technological and economic substantiations are not drafted;

The most efficient and economically most advantageous construction-structural system is not chosen;

There is a lack of qualitatively and competently drafted designs by the production organization at the construction site;

There are no effective indicators or mechanisms for material incentive. Frequently the principle followed is "the more the work drags on the higher the fees and the bonuses and the easier the fulfillment of the financial plan becomes."

For many years urban planning was focused only on preliminary and idea stages which most frequently never reached the level of blueprints and implementation. When we initiate a construction project we do not know the duration of construction time, the cost or the materials, manpower and mechanization facilities which will be required at each execution stage.

This is the reason for endless redrafts of urban construction plans. The initial designers must assume moral and material responsibility and superficial developments should not be encouraged with the help of additional fees.

This is also the reason for the unsynchronized completion of roads and engineering facilities and for endless digging through recently completed streets and sidewalks.

Last autumn a U-shaped concrete-lined ditch for electric cables was installed under the sidewalk of Dundukov Boulevard. Soon afterwards new digging was required for additional cables. Two months later the boulevard was dug up for a third time, again because of cables.

Sand pillows are a design weakness. "Shistoporit" should not be used in foundations. Manpower must not be wasted.

Obviously, the economically, technologically, structurally, operationally and other most suitable solutions for lowering the cost and speeding up execution and preventing the waste of materials, mechanization facilities and manpower, are still not being sought in the course of designing.

Low large-panel block buildings were erected at the Sukha Reka site in Sofia. In this area firm soil--gravel--is found about 3.5 meters below ground. Since no basic solution and a design for foundations in which firm soil is found at a greater depth exist in the case of large-panel housing construction in Sofia, a thick sand pillow, two meters high, had to be poured.

Such sand pillows represent a great loss to the national economy, for this is a quarry material which is poured into an already made cavity, thus losing naturally provided construction grounds. Worse cases exist such as, for example, that of the Lyulin complex, where the cavity was filled not with sand but with concrete which was described as "foundation" concrete but which was 1.60 meters thick. In a single part of the complex about 70,000 cubic meters of concrete were wasted, for this "foundation" concrete was laid with a pump. This means that in addition to 20,000 tons of cement another 85,000 cubic meters of quarry materials brought in from Pazardzhik, Blagoevgrad and the Danube River were lost. The same material could have been used for the building of many stores, garages or children's establishments....

The new administrative building of the okrug design organization was drafted in such a way that the cost was deliberately increased by about 300,000 leva. Later on the concreting of the floors was made in such a way that after a 6-year wait they could no longer be unglued and installed! For the past 6 years the totally lost construction site on Budapeshta Street, in the center of the capital, stands like a monument to our design and construction weaknesses....

Let us also mention the question of the "shistoporit." We began to produce this material in order to improve insulation and lighten the weight of buildings. However, in a number of cases this material has been misused, as was the case of the future foreign trade bank, the construction of which has remained frozen in the center of Sofia for many years. About 700 cubic meters of shistoporit concrete were used in laying the foundations.... Thus the construction workers increased

the cost of the foundations and thus easily fulfilled their financial plan. As to the building itself, on the one hand, the foundations are more expensive by several hundred percent while on the other the lightweight foundations reduce the building's safety....

Have we lost totally the sight of the real indicators which determine the qualities of a project? Have we forgotten the cost per square meter of output, the amount of steel and concrete used per square meter, what is the percentage of unused area, how long should a construction project last with a specific labor productivity? Yet it is precisely such indicators which must determine the merits of a design and the amount of fees and bonuses!

Not a single construction project in Sofia begins with the building of underground facilities and access roads and only then undertaking the construction of the building itself.

We still have no project on which the work is being done according to a precise technological system, backed by charts on the optimum number of workers to be employed at the individual stages. It is a general phenomenon to strip the projects down to the inoperative level and, when the work is resumed, there is a substantial manpower surplus and no sequency in the work is observed. The result is a greatly reduced quality, a lot of tearing down, patching up and correction of improperly made parts. More than 30 percent of the manpower is wasted.

The possibilities of the Bulgarian "wide area monolithic" system. Better organization, lower capital investments and less heavy work.

A substantial amount of new heavy-duty mechanization facilities have been procured for construction work. The Bulgarian "wide area monolithic" construction system matches its possibilities best. The construction project remains accessible to the use of heavy mechanization facilities in the implementation of all processes from the foundations to the roof. This makes it possible for the mechanization facilities to replace the use of manpower in rough and finishing operations.

The system offers possibilities of totally free planning and requires no capital investments. It uses a small amount of personnel and may be combined with the production of light panels by large-panel construction facilities. This means that some of the elements of large-panel construction may be used in the construction of house buildings even more than eight stories high.

It is entirely within the range of possibilities of a comprehensive technological crew of 40 people to build in a single year as many as 100 apartment units, totally completed. A personnel of 2,000 people could build 5,000 apartment units annually. Such results may be increased over 2 to 3 years, reaching 6,000 to 7,000 apartment units per year (3-3.5 apartment units per year per worker). With such an organization, no more than 10,000 people (excluding those engaged in large-panel construction), Sofstroy would be able easily to carry out any given assignment in Sofia.

To this effect we must consider Sofia as a single construction site in which we must synchronize all operations with the help of most progressive technologies and most skilled technical management. It is thus that within a short time we will no longer speak of shortages of manpower, materials and mechanization facilities and of the nonfulfilled plan for housing and consumer services construction....

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ECONOMIC PLAN FULFILLMENT FOR FIRST HALF 1981 PUBLISHED

Prague RUDE PRAVO in Czech 28 Jul 81 pp 1, 3

[Article by Federal Bureau of Statistics: "Report on the Development of the National Economy and Fulfillment of the Plan in the CSSR in the First Half of 1981--To Intensify Positive Directions in the Development"]

[Text] Prague, 27 Jul--In accordance with Main Directions of Economic and Social Development of the CSSR, approved by the 16th CPCZ Congress, the dynamism of our national economic development was affected in the first half of 1981 by the transition to the type of development that concentrates on conservation of raw materials, power, investments and foreign exchange. The rate of the economic growth to the comparable number of workdays agrees in essence with the objectives of the plan, except for the construction industry. The economic development was advantageously influenced by the pledge campaign at the occasion of the 16th CPCZ Congress and of the elections to representative organs on all levels.

In the first half of 1981, industrial production increased 1.8 percent and the volume of construction works declined 2.8 percent over the first half of 1980. Average daily production in industry was up 2.6 percent and in construction declined 2.0 percent; its dynamism decelerated over the 6-month period. The highest rates of growth were achieved in electrical engineering and in certain branches based on utilization of domestic raw materials, such as the cellulose and paper industry, the wood-processing industry, and the glass, ceramic and porcelain industry. Our national economy and our population received continuous supply of fuels and power. The amount of goods hauled by our public transportation system increased 3.6 percent over the same period in 1980.

The timetable for the procurement of basic animal products was surpassed. As compared with the first half of 1980, the procurement of slaughter animals (including poultry) was up 3.3 percent, of eggs 3.2 percent, while the procurement of milk was down 1.6 percent.

The relative decline of the cost of materials in the first half of this year was favorable. Qualitative changes in our economy, however, are less evident than the plan had envisaged and our possibilities would permit. With increasing competition in world markets, the unsatisfactory contribution of scientific technical development and, most of all, the slow progress of innovation and improvement of the quality of goods are preventing our export potential from advancing at a faster rate. In terms of good use of work time, of replacement of manpower with technology and of full utilization of the available machinery, the situation remains unsatisfactory.

The growth rate of exports surpassed the dynamism of imports; the turnover in foreign trade with the socialist countries increased faster than that with the capitalist states. Total sales transactions in foreign trade were up 6.3 percent over the first half of 1980, of which those with the socialist countries up 9.4 percent. Exports were up 7.9 percent, of which those with the socialist countries up 9.3 percent; imports were up 4.6 percent, of which those with the socialist countries up 9.5 percent.

The volume of completed investment projects and deliveries fell 2.6 percent below that of the first half of 1980. Planned schedules for construction projects continue to be unfulfilled and deliveries of capacities for utilization continue to lag.

In conjunction with economic achievements, the financial income of our population increased 2.4 percent nominally and almost 2 percent actually. Its effect on our domestic market did not meet the projection of the plan. The volume of savings by our population increased; primarily deposits in state savings banks were up. Furthermore, the social consumption of our population increased. Planned relations between the growth of labor productivity and average wages were not achieved in either industry or construction. Constructed were 25,661 housing units.

In order to fulfill the tasks of the plan for the current year, it is necessary to focus on the positive directions in our economic development even more than before, to suppress negative phenomena, to exploit much better the unused potential of our national economy, and to implement the Set of Measures for Improving the Planned Management System of National Economy valid as of 1 January 1981.

## Industry

Industrial production in centrally managed industry in the first half of 1981 increased 1.8 percent over the same period of 1980, of which the increase in production amounted to 1.3 percent in the CSR and 3.1 percent in the SSR. Average daily production was up 2.6 percent, which is up 0.2 percent as compared with the objectives of the annual state plan.

In conjunction with the preparation for structural changes during the Seventh Five-Year Plan, with limited possibilities of importing certain raw materials and with a gradual transition to more intensive directions in the development of production, the progress of production in individual branches was differentiated according to the plan. The rate of growth in the electrical engineering industry and in certain branches processing mainly domestic raw materials was more rapid, while production in the mining industry and in the chemical and oil-processing industries declined slightly.

As a whole, enterprise plans for gross production were exceeded 0.3 percent, however, numerous enterprises failed to meet their planned tasks. Difficulties with steady fulfillment of planned production tasks became evident especially in the general engineering, heavy engineering and electrical engineering industries, in the leather-processing and shoe-manufacturing industries. On the whole, enterprise plans for adjusted value added were surpassed by 1.3 percent.

Total deliveries of products and goods in centrally managed industry were up 1.0 percent in comparable wholesale prices. Over the same period of 1980, deliveries for consumption in production and services increased 1.4 percent, deliveries for export

to the nonsocialist countries 0.1 percent and deliveries for export to the socialist countries, 0.8 percent. The volume of deliveries to our domestic market remained on approximately the same level as in 1980. In accordance with the objectives of the plan, the volume of machinery and equipment delivered for capital investment increased 1.7 percent.

The achievement of the planned structure in the production of more sophisticated assortments of goods and of the sales structure caused problems which in turn adversely affected the overall steady progress of production, fluid consumer-supplier relations and thus, also the comprehensive fulfillment of the plan. All indicators stipulated for continuous control of the fulfillment of the plan were met in the first half of the year by about one-half of all the organizations for which they had been specified.

In total achievements, the level of costs in industrial production developed favorably. The share of total costs, including the share of costs of materials in outputs, which declined below the level of the first half of 1980, failed to meet the level envisaged by the state plan for the year. Advantageous achievements in cost development affected the development of profitability where the achieved level was below the plan both in return on costs and in return on operating assets.

Labor productivity increased 2.0 percent in conversion to a comparable number of workdays (on the basis of gross production), while the annual plan envisaged a 2.1 percent growth. Average wages of industrial workers was up 2.0 percent (annual plan 1.8 percent).

In the first half of the year, employment in centrally managed industry increased 15,600, i.e., 0.6 percent, over the same period of 1980, and amounted to 2,622,000 persons. The number of workers increased 0.2 percent in the CSR (planned annual growth 0.3 percent) and 1.6 percent in the SSR (planned annual growth 1 percent).

Individual branches scored the following achievements in the first half of the year:

The fuel and energy base in general successfully maintained continuous supplies of the main types of fuels and power to our national economy. The total plan for coal mining for the first half of the year was exceeded by 612,000 tons and 50 percent of the annual tasks were fulfilled. All coal-mining enterprises fulfilled their plan. Delays are still evident in stripping of overlying soil, where the plan was fulfilled 96.0 percent.

Power generation was up 1.4 percent, of which 74.8 percent in the nuclear power plant; its production amounted to 8.2 percent of total power generated.

Production in the metallurgical industry increased 1.3 percent, of which production in ferrous metallurgy increased 2.3 percent and production in ore mining and metallurgy of nonferrous metals declined slightly.

Total engineering production increased 3.3 percent, of which the most dynamic increase, 5.6 percent, was achieved by the electrical engineering industry. Some enterprises encountered problems in their attempt to meet the structure of assortments of goods, which adversely affected continuity in the fulfillment of planned deliveries, particularly for export and for the needs of capital investment. Consolidation of advanced modern branches of production, particularly electric engineering, continued during the first half of the year.

# Production of Important Industrial Goods

	Unit of measure	Effect of the first half of 1981	Fulfillment of state plan for the year <sup>1</sup>	First half of 1981 in percent of the first half of 1980
Bituminous coal (basic mining--for sale)	1,000 ton	13,982	50.3	96.7
Brown coal, including lignite (basin mining --for sale)	1,000 ton	47,921	49.9	102.0
Electric power	Mil kWh	36,932	50.3	101.4
Crude steel	1,000 t	7,772	49.5	103.4
Rolled stock	1,000 t	5,324	48.0	100.3
Plastics	1,000 t	433.5	45.4	98.4
Synthetic fibers	1,000 t	85.1	54.0	102.0
Tires for passenger cars and trucks	1,000 units	1,632	50.8	102.3
Passenger cars	1 item	92,082	52.0	95.5
Trucks	1 item	23,968	51.8	105.7
Agricultural machinery and equipment	Kcs million	1,191.7	47.5 <sup>3</sup>	105.0
Household refrigerators	1,000 units	189.0	54.6	106.1
TV sets	1,000 units	208.8	52.9	101.1
Concrete	1,000 t	4,958	44.8	99.5
Lime	1,000 t	1,599	50.7 <sup>3</sup>	105.8
Furniture of wood and other materials <sup>2</sup>	Kcs million	3,413	48.3 <sup>3</sup>	102.1
Cotton textiles	million meters	288.7	48.7	100.9
Footwear, total <sup>2</sup>	million pairs	59.6	51.6	99.2
Meat in slaughter treatment	1,000 t	490.7	51.6	105.2
Dairy butter	1,000 t	60.3	47.4	94.5
Refined sugar	1,000 t	112.7	12.6	82.7
Beer	1,000 hl	11,645	49.2 <sup>3</sup>	102.2

Due to limited sources of imported raw materials the volume of production of the chemical industrial remained on approximately the same level as during the corresponding period of 1980; production of the rubber and asbestos industries increased 3.2 percent; production in the chemical and oil-processing industries declined 1.8 percent.

Production in the wood-processing industry increased 2.9 percent, 2.7 percent of which in the wood-processing industry and 3.2 percent in the cellulose and paper industries.

<sup>1</sup>The share of the annual time fund in the first half of the year was 48.8 percent.

<sup>2</sup>Not including local industry and the Association of Manufacturing Cooperatives.

<sup>3</sup>Fulfillment of the annual enterprise plan.



Total production in light industry was up 2.2 percent. The glass, porcelain and ceramic industries achieved a faster growth rate at 2.7 percent; production of the processing industry 1.7 percent, and the polygraphic industry 0.8 percent.

The industry of construction materials increased its production 1.8 percent. Higher increases were noted in the manufacture of ceramic tiles--17.5 percent, of lime--5.8 percent, and unburned masonry materials--6.5 percent; however, the production of concrete declined 0.5 percent, which was due in particular to the nonfulfillment of the plan for construction work and with measures for conservation in the consumption of concrete.

The food industry reported a total increase of 1.9 percent in its production, of which production in the milling and baking industry went up 4.6 percent, and in the meat industry 1.6 percent.

#### Agriculture

Due to favorable weather, seasonal tasks in the spring were completed promptly and well; the plowed-under areas did not exceed the average of several years. The dry and cool weather in April and the continuous lack of precipitation in May and June adversely affected most crops during their vegetation period. Hard night frosts damaged certain crops in the fields, fruit trees, shrubs and early vegetables.

The cultivation plan was fulfilled this year in areas growing sugar beets, oleiferous crops and mainly also potatoes. The planned area of arable land cultivating fodder crops was surpassed by 7.5 percent and cultivating vegetables by 7.1 percent. The area growing grain crops was 2.4 percent below the plan.

The development of animal production was limited from the beginning of the year by the sources, structure and quality of fodders. The objective of the plan to regulate the inventories of hogs was only partially fulfilled. The inventories of livestock remained on approximately the same level as in the first half of 1980.

#### Inventories of Livestock as of 1 July (Agriculture Total)

	1980	1981	In thousands of head Index 1981/1980
Cattle total	5,056	5,131	101.5
of which cows	1,877	1,878	100.1
Hogs total	7,903	7,871	99.6
of which sows	599	548	98.0
Poultry total	61,232	60,988	99.6

In view of the adopted measures, the inventories developed more advantageously in the CSR than in the SSR. The inventories of hogs in the CSR declined 1.6 percent over the first half of 1980, while in the SSR the inventories of hogs were 1.8 percent above the same period of 1980.

Raising of pigs and calves in the socialist sector increased over the comparable period of 1980 due to a lower mortality rate. On the statewide average 54.3 calves were raised per 100 cows, and 8.55 pigs per sow. Average per hen production increased to 126.9 eggs.

The inferior quality of fodders was reflected this winter in lower milk production in cows and in continually stagnating daily average weight increments in hogs and cattle in fattening stations. The average daily productivity of cows in the socialist sector amounted to 8,46 litres; total milk production declined 22 million litres over the first half of 1980. The average daily weight increment was 0.50 kg in hogs and 0.68 kg in the cattle.

Of the total task stipulated for the year by the state plan 50.4 percent of slaughter livestock (including poultry), 48.8 percent of milk, and 52.0 percent of eggs were procured in the first half of the year.

Repairs of mechanized equipment for harvesting fodder and grain crops could not be accelerated this year again. The availability of the equipment remained on approximately the same level as last year.

#### Forest Economy

In the first half of this year, 53.4 percent of the total annual task stipulated by the annual plan, which amounts to 18,254,000 cubic meters of wood, were produced, i.e., 9.75 million cubic meters. Deliveries of timber amounted to 8.55 million cubic meters, i.e., 50.2 percent of the plan for the whole year. Within the total production 4 million cubic meters of down timber were processed.

#### Water Economy

The production of drinking water increased 28 million cubic meters over the first half of 1980, to a total 790 million cubic meters. The share of the population supplied with water from public water mains increased from 69.8 percent in the first half of 1980 to 70.9 percent, and the share of the population residing in houses connected to public sewer systems increased from 57.2 percent to 57.9 percent.

#### Construction Industry

Construction enterprises completed construction projects built by their own work force for Kcs 38.4 billion. The volume of construction projects declined 2.8 percent over 1980, although according to the plan it should increase 2.7 percent over the entire year. Furthermore, construction works, especially construction projects for capital investment are not being completed in agreement with delivery contracts. Considerable imbalance was evident in the fulfillment of the planned tasks by individual construction enterprises; 74.9 percent of enterprises failed to meet the planned volume of construction work by their own workers.

The unsatisfactory results achieved by construction enterprises stem in particular from inferior organization of construction work in numerous enterprises, with consequent underutilization of machinery, chronic excessive scope of unfinished construction projects and with inadequate preparation of building sites and plans for many construction projects.

The volume of adjusted value added of construction enterprises amounted to Kcs 15.6 billion, and the enterprises fulfilled their plans 98.5 percent. Positive achievements were noted in the development of costs of materials without depreciation, whose share in the outputs of construction enterprises fell below the plan.

The number of employees in construction enterprises declined 0.5 percent as compared with the first half of 1980 and amounted on the average to 546,000 persons; the number of workers in construction projects decreased 0.8 percent.

The development of the relation between the growth of labor productivity and average wages was unfavorable. As compared with the planned objectives, the development of labor productivity was adverse, having declined 2.3 percent over the same period of 1980. The average monthly wage amounted to Kcs 2,870 and increased 0.8 percent over the first half of 1980.

#### Transportation and Communications

In the first half of 1981, 321 million tons of goods were hauled by public transport, 142.5 million tons of this by railroads.

Railroad loading amounted to 120 million tons, which represents a 2.1 percent increase over the first half of 1980. Among the main substrates, the loading plan for crude oil, tars and their products and the loading plan for individual mineral raw materials have not been fulfilled. In terms of the qualitative indicators, the plan of average static load of a car unit and the plan for labor productivity for a service locomotive in traction were fully met; however, the turnaround time of a car unit developed adversely, amounting to 4.18 days (as compared with the planned 4.06 days).

The CSAD [Czechoslovak Automobile Transportation] hauled 173.3 million tons of goods on highways, which is 9.8 million tons more than in the first half of 1980.

River transport shipped 5.3 million tons of goods, i.e., 12 percent more than in the first half of 1980. Higher transport of power coal for the Chvaletice power plant shared to a major extent in that increment.

In the first half of the year, 1,301,000,000 passengers were transported by public passenger transport, which is 6.4 million persons more than during the same period of 1980. The CSAD transported 1.1 billion persons, and the CSD [Czechoslovak Railroads] 207.4 million persons.

During the first half of the year, the metro transported 129 million passengers as compared with 110 million passengers during the same period of 1980, i.e., 16.8 percent more.

The number of telephones in service increased 36,000. There are 3,186,000 telephone units in operation, which represents a density of 20.84 units per 100 citizens.

#### Capital Investment

In the first half of the year investment projects and deliveries (not including action 2 and programs undertaken by the population) amounting to Kcs 56 billion were completed, which is 2.6 percent less than in the same period of 1980. The planned volume for the year was fulfilled 41.0 percent--42.2 percent in construction works and 39.4 percent in deliveries of machinery and equipment.

Investment projects and deliveries completed in the CSR amounted to Kcs 36.1 billion, and in the SSR to Kcs 19.9 billion.

Relatively more favorable results were achieved in construction projects with a budget in excess of Kcs 2 million, especially in mandatory projects. In the first half of the year, 42.0 percent of the volume of projects and deliveries planned for the year and 45.1 percent in construction projects designated as mandatory projects were fulfilled in construction projects over Kcs 2 million. Despite a better overall fulfillment of the volume of construction projects designated as mandatory tasks, a certain part of those capacities did not begin operation on the planned deadline, mainly because of unsatisfactory site and planning preparations and because of inefficient organization of construction work.

Some of the new capacities introduced into operation in the first half of the year are: the Krajka Lace of Kraslice in the Libavske Udoli Libava valley--modernization project for manufacture of 13,943,000 square meters of curtains and laces annually; the meat plant in Sudena, second stage, 9,500 tons of meat products annually; the repumping hydroelectric station on the Cierny Vah River--turbogenerator 2--110 MW; the Czechoslovak-Soviet Friendship chemical plants in Zaluži--new refinery processing 3 million tons of crude oil annually; the grain silo in Hodonice--50,000 tons; the industrial school in Most--16 schoolrooms for 576 students.

#### Scientific Technological Development

The achievements of scientific-technological development, its emphasis and focus on vital tasks, social efficiency, promptness and scope of implementation and application of the achievements of science and technology still fall short of our potential and of the needs of our national economic development.

The volume of new products increased; its share in the total volume of production as well as the achieved quality of goods, however, remain unsatisfactory even in branches which should be the bearers of technological progress, such as the engineering and electrical engineering industries.

In the first half of the year, 94.6 percent of the research and developmental tasks of the state plan were met and 90 percent of the state plan tasks in introducing new technologies in production were met. The fulfillment of research and developmental tasks of the state plan was higher than in the first half of 1980.

Examples of successfully introduced new technologies in production are: introduction of the production of wheel sets with adjusted dimensions and form; introduction of the production of seamless microalloy pipes; introduction of the constructions of industrial buildings with a labor input of 1.13 h/cubic m hours per cubic meter capacity of the building space and multilevel buildings with a labor input of 3.17 h/cubic m capacity; introduction of the production of the NC system and readout with solid algorithms; introduction into full-scale operation of integrated shaping in the manufacture of parts made from metal plate; introduction of technology for the manufacture of hybrid integrated multilayer circuits with a range of complexity from 100 to 300 units per circuit.



In the first half of the year, the CSSR concluded 18 agreements on scientific-technical cooperation with the CEMA member states, i.e., 4 agreements more than in the same period of 1980.

#### Foreign Trade

In the first half of the year the basic objective of the plan for foreign trade--for exports to exceed imports--was successfully met in general as well as in relation to the nonsocialist states.

Rate of Growth of the Transactions in Foreign Trade in the First Half of 1981 in Percent (First Half of 1980 100)

Total export	107.9	total import	104.6
of which:		of which:	
to the socialist countries	109.3	from the socialist countries	109.5
to the nonsocialist states	106.2	from the nonsocialist states	97.7

Integration of the CSSR in the international division of labor, primarily within the CEMA community, provides the stabilizing factor in foreign economic relations. As compared with the first half of 1980, the exchange of goods with the CEMA member states increased 8.5 percent, 13.3 percent of this with the USSR.

The development of trade with the socialist states was favorably influenced by the process of socialist integration which provides preconditions for more efficient exploitation of material and natural resources by joint participation in the construction of raw-material capacities. The process of specialized production and cooperation, particularly in the engineering and metal-processing production area, continued to develop advantageously.

#### Living Standard

In the first half of 1981 a total of 6.57 million persons were employed in the socialist sector of our national economy (not including the JZD [unified agricultural cooperatives]), i.e., 0.7 percent more than in the same period of 1980. Employment increased at a faster rate in the SSR (1.5 percent) than in the CSR (0.3 percent). Most of the increment in the number of workers continued to incline in the direction of nonproduction branches.

In the first half of 1981, the financial income of our population amounted to Kcs 176.8 billion, which was Kcs 4.2 billion, or 2.4 percent, higher than in the same period of 1980. Incomes from wages accounted for Kcs 2.9 billion and social income for Kcs 0.4 billion in the increase of financial income. Financial income in the first half of the year increased 2.1 percent in the CSR and 3.2 percent in the SSR.

The average monthly nominal wage of the workers in the socialist sector of our national economy (not including the JZD) was Kcs 2,639, and the increase over the first half of 1980 amounted to 1.9 percent. Real wages were up 1.3 percent. The realized financial income of our population was up 1.2 percent. The increase of deposits and cash of our population amounted to Kcs 9.8 billion. Deposits increased markedly higher than in the first half of 1980 also because of deficient supplies of goods for the domestic market. State savings banks granted loans in the amount of Kcs 4.9 billion.

The dynamism of retail trade was slower in the first half of 1981 than envisaged in the plan primarily due to the unsatisfactory structure of supplies of goods and diminished interest of consumers in purchasing certain types of products, particularly their declining interest in passenger automobiles, furniture and certain types of textile goods.

According to estimates, all retail systems earned Kcs 120.2 billion During the first half of the year, i.e., 0.2 percent more than during the same period of 1980. Retail turnover in the CSR remained on approximately the same level as in the first half of 1980, while in the SSR it rose 1.3 percent.

Food continued to be supplied to our domestic market without any major fluctuations; deficiencies in the line of products were occasionally evident. The situation was more complicated with supplies of industrial products. Demands of our population for various types of products, such as textiles, pharmaceuticals, household and sports needs, etc. were not fully satisfied. When purchasing passenger automobiles, the focus was on Czechoslovak-made cars.

During the academic year of 1980-1981, 388,800 students attended day courses in all types of secondary schools, and 151,500 students attended institutes of higher education. An additional 170,400 persons were upgrading their qualification in work-study programs, more than one-fourth of them in institutes of higher education.

In the first half of the year, 25,661 housing units were completed in all types of housing construction, which was 9,479 less than those completed in the same period of 1980. In the first half of 1981, 28.4 percent of the annual plan for housing units were fulfilled, which is 4.1 point less than last year; the plan for the completion of housing units had envisaged a more gradual decline. Less favorable results were due to a major extent to the necessity of some of the construction enterprises to complete their work in housing units which had been turned over to the investors at the end of 1980 but which because of defects could not be released for occupation to residents.

Of all the completed housing units, 4,920 were built by community action programs, 8,833 by cooperative programs, 3,175 by enterprise construction, 8,733 in individual construction. The construction of 39,200 housing units, or 4,800 less than in the first half of 1980, was initiated.

In the first half of 1981, there were 121,000 live births, i.e., 6.7 percent fewer than in the same period of 1980. The natural increment amounted to 31,000 persons. The number of marriages declined and the rate of divorces increased slightly.

The development of population was more favorable in the SSR than in the CSR. Toward the end of June the population of the CSSR was 15,313,000, 10.3 million in the CSR and 5,013,000 in the SSR.

## LIVESTOCK PRODUCTION FOR 1975-1980 ASSESSED

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[Article by Dr Engr Josef Krecek, deputy director, Agricultural Production Sector, Federal Ministry of Agriculture and Food: "Assessment of Livestock Production for the Year 1980 and the Entire Sixth Five-Year Plan]

[Text ] The Sixth Five-Year Plan called for consumption of food of livestock origin per inhabitant to attain 87 kg of meat, 216 liters [L] of milk and dairy products (not to include butter) and 302 eggs. This presupposed an increase in production for the market in the course of the Sixth Five-Year Plan in comparison to the 1975 level for individual livestock products: total of animals for slaughter (without poultry) by 279,100 metric tons [t], i.e., 19.7 percent; this amount includes an increase for horned cattle for slaughter by 118,300 t, i.e., 18.5 percent and pigs for slaughter by 161,000 t, i.e., 21.8 percent; poultry for slaughter by 49,100 t, i.e., 27.6 percent; milk by 690.3 million L, i.e., 15.1 percent and eggs by 298.4 million units, i.e., 12.9 percent.

At the same time the Sixth Five-Year Plan envisioned an increase in gross livestock production from Kcs 42,201,000,000 to 47,960,000,000 i.e., 13.6 percent and livestock production for the market to increase state funds from Kcs 33,212,000,000 to 39 Billion, i.e., 18.6 percent.

For the year 1980, in compliance with the production base potential and material resources the state implementation plan set a lower rate of increase than for other years. Even so it involved challenging tasks which, in comparison with the situation in 1979, called for increasing the procurement of livestock for slaughter, without poultry, by a total of 17,800 t, i.e., by 1.1 percent, which includes procurement of horned animals for slaughter by 18,500 t, i.e., by 2.8 percent; eggs for consumption by 80 million, i.e., 3.1 percent.

Due to high demand for nutritive fodders, a stagnation of tasks in the production and procurement of pigs and poultry for slaughter was expected to set in during the final year of the Sixth Five-Year Plan.

Analysis of the results attained in the years 1976 through 1980 shows that even though very valuable achievements were made in that period, the goals of the Sixth Five-Year Plan as a whole in regards to livestock production had not been met. Gross livestock production increased 11 percent and livestock production for the market during the Sixth Five-Year Plan increased 13.9 percent.

Livestock production for the market in the case of all animals for slaughter (except poultry) for the years 1976 through 1980 increased 18 percent. From this amount the procurement of horned cattle for slaughter increased 9 percent and that of pigs for slaughter 31.6 percent. Procurement of poultry for slaughter increased 44.5 percent, milk 12.7 percent and consumer eggs 14.3 percent. This shows that the quotas called for by the planned could be met and exceeded in production for marketing of pigs for slaughter, poultry for slaughter and eggs for consumption. On the other hand, the quotas for production and procurement of horned cattle and milk failed to be met.

The attained production and procurement provided an increase in the consumption of meat from 81.1 kg in 1975 to 85 kg in 1980, milk from 210.4 l to 233 l and eggs from 297 units to 320 (preliminary data).

In 1980, gross livestock production in comparison with the Penultimate year of the Sixth Five-Year Plan increased 3.6 percent and livestock production for the market 3.1 percent.

Among the key livestock products the state procurement plan for livestock for slaughter as a whole, not including poultry was met 100.2 percent, poultry for slaughter 105.4 percent, milk 103.1 percent and eggs 102.4 percent.

The extent of meeting individual tasks in the procurement of livestock products for the year 1980 is shown in Table 1.

In comparison with 1979, total procurement of livestock for slaughter (not including poultry) increased 21,700 t, including 8,400 t of horned cattle for slaughter, 13,600 t pigs for slaughter, 7,100 t poultry for slaughter, 242.3 million l milk and 143 million eggs.

Analysis of meeting procurement goals by regions shows that in the last year of the Sixth Five-Year Plan procurement of livestock for slaughter (without poultry) was met by all regions except the East Slovakian Region. The planned procurement of horned cattle for slaughter was met only by the South Moravian Region. All other regions made up for losses in meeting the horned cattle quota by increased production and procurement of pigs for slaughter, the quota for which was exceeded in all regions. Except for the West Slovakian and East Slovakian Regions all other regions met the plan quota for procurement of sheep and goats.

The plan quota for milk procurement was met by all regions except the East Slovakian Region. Quotas in the production of poultry for slaughter for the market in 1980 were met by all regions and in procurement of eggs for consumption only the Central Slovakian and East Slovakian Regions were lagging.

Favorable carrying out of the state plan for procurement of livestock products was primarily facilitated by improved utility value of livestock (Table 2).

In comparison with 1979, the average annual milk yield of cows increased 133 l, including increases in the CSR by 170 l and the SSR by 47 l.



Table 1. Meeting of the Plan for Procurement of Livestock Products in 1980 in Totals for Sectors

	Ukazatel  (1)	Státní pro- vádě- cí plán (2)	Sku- teč- nost (3)	Rozdíl proti plánu (4)	
(5)	jatečná zvířata celkem bez drůbeže tis. t	ČSSR SSR	1595 1110	1599,0 1113,5	+ 4,0 + 3,5
(6)	z toho: jatečný skot tis. t	SSR ČSSR	485 879	485,5 888,9	+ 0,5 - 10,1
(7)	jatečná telata tis. t	ČSSR SSR	492 187	484,8 184,1	- 7,2 - 2,9
(8)	jatečná prasata tis. t	ČSSR SSR	18 13	18,8 12,8	- 1,2 - 0,4
(9)	jatečné ovce a kozy tis. t	SSR ČSSR	5 288	4,2 290,0	- 0,8 + 4,0
(10)	jatečná drůbež tis. t	ČSSR SSR	10 3	10,9 3,7	+ 0,9 + 0,7
(11)	Mléko mil. l	SSR ČSSR	7 228	7,2 244,7	+ 0,2 + 18,7
(12)	Vejce mil. kusů	ČSSR SSR	150 78	181,8 83,1	+ 11,8 + 5,1
		ČSSR SSR	5010 3800	5182,9 3758,9	+152,9 +158,9
		ČSSR SSR	1410 2820	1404,0 2883,2	- 6,0 + 63,2
		ČSSR SSR	1850 770	1832,0 751,2	+ 82,0 - 18,8

Key:

- |   |  |
|---|--|
| 1. Index  | 7. Calves for slaughter in thousands of t          |
| 2. State Implementation Plan  | 8. Pigs for slaughter in thousands of t            |
| 3. Attained amount  | 9. Sheep and goats for slaughter in thousands of t |
| 4. Divergence with plan   | 10. Poultry for slaughter in thousands t           |
| 5. Total of livestock for slaughter without poultry in thousands of t | 11. Milk in millions of l                          |
| 6. Including: horned cattle for slaughter in thousands of t           | 12. Eggs in millions of units                      |

Calf breeding per 100 cows increased 1.07 units and breeding of piglets per sow by 0.39 pieces. In comparison to 1979 the increases in breeding amounted to 27,200 calves and 487,700 piglets. Average egg yield per hen increased by 4 eggs.

The average daily increment in the weight of pigs during fattening to include pre-fattening increased 0.011 kg. The stepped up increment represents an increase in production of pigs for slaughter by 16,600 t. Less favorable was the development in the average daily increase in weight in fattening of horned cattle which in comparison with 1979 increased only 0.01 kg. The average slaughter weight of horned cattle for slaughter including cows increased 7 kg, of which young horned cattle for slaughter accounted for 10 kg. Increased slaughter weight of horned animals for slaughter made it possible to deplete the stock by 20,900 animals less than was the case with the slaughter weight achieved in 1979.

Table 2. Development of Indices of the Utility Value of Livestock in Individual Years of the Sixth Five-Year Plan in Comparison with the Year 1975

Ukazatel (1)	Jednotka (2)	Rok (3)	ČSSR	CSR	SSR
Průměrná doji- vost na krávu (4)	l	1980	3084	3119	3003
od začátku roku		1979	2951	2949	2956
za sektory		1978	2931	2957	2889
celkem		1977	2885	2919	2805
		1976	2804	2845	2709
		1975	2803	2845	2703
Průměrná doji- vost na krávu (5)	l	1980	3104	3117	3070
od začátku roku		1979	2970	2942	3039
za socialistický		1978	2952	2949	2980
sektor		1977	2908	2909	2908
		1976	2831	2832	2828
		1975	2828	2831	2822
Odchov telat na 100 krav (6)	ks pc	1980	98,48	100,48	93,58
		1979	97,41	98,98	93,48
		1978	97,82	99,31	93,33
		1977	96,35	99,08	91,88
		1976	95,16	96,67	91,17
		1975	92,82	94,15	88,48
Odchov selat na prasnic (7)	ks pc	1980	18,71	18,37	18,18
		1979	18,32	18,37	15,29
		1978	18,68	18,80	18,45
		1977	18,90	17,02	18,88
		1976	18,34	18,45	18,11
		1975	15,86	18,37	14,88
Průměrná snáška vajíček na slepici (8)	ks pc	1980	228	235	214
za sektory		1979	224	229	215
celkem		1978	228	229	219
		1977	228	229	217
		1976	226	227	206
		1975	218	224	209
Průměrný denní přírůstek prasat ve výkrmu (9)	kg	1980	0,516	0,523	0,502
		1979	0,505	0,507	0,502
		1978	0,507	0,515	0,499
		1977	0,513	0,519	0,500
		1976	0,507	0,513	0,498
		1975	0,508	0,517	0,490
Průměrný denní přírůstek skotu ve výkrmu (10)	kg	1980	0,72	0,71	0,74
		1979	0,71	0,69	0,79
		1978	0,73	0,71	0,77
		1977	0,75	0,74	0,79
		1976	0,74	0,73	0,78
		1975	0,78	0,74	0,82
Průměrná poráž- ková hmotnost skotu (11)	kg	1980	473	478	467
		1979	466	466	467
		1978	477	479	471
		1977	473	475	468
		1976	484	480	481
		1975	493	502	472
Průměrná poráž- ková hmotnost telat (12)	kg	1980	87	88	85
		1979	88	88	88
		1978	89	89	89
		1977	90	90	92
		1976	98	98	98
		1975	101	99	107
Průměrná poráž- ková hmotnost prasat (13)	kg	1980	110	109	110
		1979	110	109	112
		1978	109	108	109
		1977	108	107	111
		1976	104	103	108
		1975	103	102	103

Key:

1. Index
2. Unit
3. Year
4. Average milk yield per cow from beginning of the year, total for sectors
5. Average milk yield per cow from beginning of the year for the socialist sector
6. Calf breeding per 100 cows
7. Piglet breeding per sow
8. Average egg yield per hen, total for sectors
9. Average daily increase in the weight of fattened horned cattle
10. Average daily increase in the weight of fattened horned cattle
11. Average slaughter weight of horned cattle
12. Average slaughter weight of calves
13. Average slaughter weight of hogs

In the course of 1980 there also occurred a decrease in the losses caused in livestock production by mortality of livestock. Mortality of piglets decreased against the 1979 level from 7.3 percent to 6.9 percent and mortality of other categories of pigs from 7.2 percent to 6.9 percent. Losses of calves for the same period increased from 5.1 percent to 5.4 percent. In other categories of horned cattle, mortality decreased from 1.8 to 1.7 percent.

Results of detailed investigations conducted on a regular basis by the veterinary service with particular emphasis on agricultural enterprises with a higher level of losses due to mortality show that the weakest link is constituted primarily by shortcomings in organization and management of breeding, in nutrition and care and often also in inadequate zoohygienic conditions of sheltering animals in stalls and stables.

The share of regions in upgrading the utility value of livestock in the national republics in 1980 is shown in Table 3.

Table 3. Development of Utility Value of Livestock in 1980 in Comparison with 1979

Kraj (1)	Průměrná roční dojitost na krávu (2)		Odchov telat na 100 krav ks (3)		Odchov selat na prasnici ks (4)		Průměrný denní přírůstek skotu ve výkrmu kg (5)		Průměrný denní přírůstek prasetí ve výkrmu včetně předvýkrmu kg (6)		Průměrná roční snáška vajec na slepici ks pcs (7)	
	1980	1979	1980	1979	1980	1979	1980	1979	1980	1979	1980	1979
Středočeský 1	3033	2800	95,88	95,08	18,39	15,8	0,85	0,82	0,535	0,512	227	223
Jihočeský 2	2935	2785	103,95	102,87	17,51	18,9	0,75	0,73	0,528	0,508	225	225
Západočeský 3	2985	2774	98,43	97,05	17,78	18,9	0,71	0,68	0,525	0,513	228	221
Severočeský 4	2970	2734	98,72	95,90	18,29	15,4	0,83	0,80	0,518	0,492	235	227
Východočeský 5	3249	3143	103,51	101,99	17,10	18,7	0,88	0,88	0,532	0,519	237	233
Jihomoravský 6	3311	3128	99,51	98,47	17,09	18,3	0,77	0,78	0,515	0,499	244	238
Severomoravský 7	3154	3055	102,08	100,38	18,84	18,3	0,71	0,71	0,507	0,497	243	231
Západoslovenský 8	3487	3442	96,22	96,32	18,85	18,8	0,79	0,83	0,512	0,515	225	228
Středoslovenský 9	2821	2890	90,88	91,37	15,09	15,0	0,70	0,72	0,492	0,479	218	214
Východoslovenský 10	2616	2555	91,88	90,71	15,80	18,2	0,88	0,72	0,477	0,477	194	198

Key:

- |                     |   |
|---------------------|---|
| 1. Region           | 2. Average annual milk yield per cow  |
| 1 Central Bohemia   | 3. Calf breeding per 100 cows   |
| 2 Southern Bohemia  | 4. Piglet breeding per sow  |
| 3 Western Bohemia   | 5. Average daily increment in the weight of fattened horned cattle                |
| 4 Northern Bohemia  | 6. Average daily increment in the weight of fattened hogs to include prefattening |
| 5 Eastern Bohemia   | 7. Average annual yield of eggs per hen   |
| 6 Southern Moravia  |   |
| 7 Northern Moravia  |   |
| 8 Western Slovakia  |   |
| 9 Central Slovakia  |   |
| 10 Eastern Slovakia |   |

Even in the last year of the Sixth Five-Year Plan the highest milk yields were attained by agricultural enterprises in the regions of Western Slovakia, Eastern

Bohemia and Southern Moravia. Pure natality in the case of calves exceeded 100 calves per 100 cows in the regions of Southern Bohemia, Eastern Bohemia and Northern Moravia and in the case of piglets 17 piglets per sow in the regions Western Bohemia, Southern Bohemia, Eastern Bohemia and Southern Moravia. In daily weight increment the most successful was the Western Slovakian Region even though it marked a decrease in comparison to 1979. In daily increments in live weight of fattened hogs the best results were achieved by the regions of Central Bohemia, Eastern Bohemia, Southern Bohemia and Western Bohemia. The highest yield of eggs per hen was registered in both regions of Moravia.

#### Development of Fodder Consumption

An analysis of the consumption and reserves of fodder processed on the basis of statistical data showed that meeting of quotas in livestock production in 1980 required in the socialist sector 9,056,800 t of nutritive fodders and 5,912,600 starch units. In comparison to the 1979 level, this represents a 39,000 t increase in nutritive fodders and 296,100 in starch units with a decrease in bulk fodders.

An analysis of fodder consumption for 1980 shows an overall improvement in the utilization of nutritive and bulk fodders in both republics and the reported consumption of fodders is commensurate to the attained livestock production results. This is documented also by the fact that an increment in gross livestock production of 3.6 percent was achieved by a mere 0.4 percent increment in the consumption of nutritive fodders in comparison with 1979.

Development of the consumption of nutritive fodders per unit of livestock product by regions over the past three years is listed in Table 4.

Table 4 Outline of Nutritive Fodder Consumption for the Years 1978 through 1980 by Regions and Republics (in kg)

Kraje, republiky (1)	Na 1 litr mléka (2)			Na 1 kg jatečného skotu (3)			Na 1 kg jatečných prasetí (4)			Na jedno vejce (5)			Na 1 kg brojlara (6)		
	1978	1979	1980	1978	1979	1980	1978	1979	1980	1978	1979	1980	1978	1979	1980
Středočeský 1	0,28	0,29	0,27	2,84	2,80	2,54	3,83	3,83	3,71	0,17	0,17	0,16	2,75	2,67	2,72
Jihočeský 2	0,28	0,27	0,28	2,83	2,89	2,83	3,66	3,71	3,62	0,16	0,16	0,15	2,68	2,53	2,59
Západočeský 3	0,28	0,29	0,27	2,86	3,13	2,87	3,72	3,69	3,63	0,16	0,17	0,16	2,55	2,49	2,50
Severočeský 4	0,29	0,31	0,29	3,05	3,28	2,83	3,79	3,80	3,81	0,17	0,18	0,17	2,75	2,62	2,58
Východočeský 5	0,28	0,30	0,28	2,87	3,03	2,69	3,73	3,71	3,62	0,18	0,17	0,17	2,58	2,57	2,58
Jihomoravský 6	0,29	0,29	0,28	2,50	2,55	2,24	3,78	3,79	3,68	0,17	0,17	0,17	2,69	2,59	2,59
Severomoravský 7	0,28	0,30	0,27	2,80	2,68	2,50	3,82	3,81	3,74	0,18	0,17	0,17	2,50	2,43	2,53
Západoslovenský 8	0,29	0,29	0,28	2,47	2,30	2,08	4,01	3,93	3,94	0,17	0,18	0,18	2,68	2,73	2,75
Středoslovenský 9	0,30	0,31	0,29	2,74	2,78	2,47	4,05	4,10	4,00	0,17	0,18	0,18	2,97	2,98	2,88
Východoslovenský 10	0,29	0,29	0,27	2,70	2,68	2,50	4,25	4,28	4,14	0,18	0,17	0,18	3,00	2,92	2,83
ČSSR 11	0,28	0,29	0,27	2,68	2,73	2,48	3,88	3,87	3,77	0,17	0,17	0,17	2,78	2,67	2,68
ČSR 12	0,28	0,29	0,27	2,72	2,83	2,57	3,77	3,77	3,67	0,17	0,17	0,17	2,68	2,57	2,58
SSR 13	0,29	0,29	0,27	2,80	2,51	2,27	4,08	4,08	3,99	0,18	0,18	0,18	2,93	2,84	2,80

Key:

- |                     |  |
|---------------------|--|
| 1. Region           | 2. Per liter of milk                     |
| 1 Central Bohemia   | 3. Per kg of horned cattle for slaughter |
| 2 Southern Bohemia  | 4. Per kg of hogs for slaughter          |
| 3 Western Bohemia   | 5. Per egg                               |
| 4 Northern Bohemia  | 6. Per kg of broiler                     |
| 5 Eastern Bohemia   |  |
| 6 Southern Moravia  |  |
| 7 Northern Moravia  |  |
| 8 Western Slovakia  |  |
| 9 Central Slovakia  |  |
| 10 Eastern Slovakia |  |
| 11 ČSSR             |  |
| 12 ČSR              |  |
| 13 SSR              |  |



Confrontation of the data in this table with similar data for the first 2 years of of the Sixth Five-Year Plan indicates a decreasing trend in the consumption of nutritive fodders for all livestock products.

Despite the overall favorable partial improvements in the level of fodder management, regular inspections of compliance with the obligatory system of management of fodders in regions and districts have disclosed persistence of unused resources, particularly enterprises with comparable production conditions.

#### Development in Inventories of Livestock in Relation to Meeting the Quotas of 1980 and of the Entire Sixth Five-Year Plan

In the course of the Sixth Five-Year Plan inventories of horned cattle increased 436,000 animals, hogs 1,175, of which sows accounted for 63,600. There was also a favorable increase, particularly in the CSR, in the inventory of sheep, even though it involved mainly small breeders and farmers from the private sector. An even rate of development in relation to quotas has also been maintained in poultry inventories.

However, undesirable stagnation continues to persist in cow inventories. The development of livestock inventories in 1980 and throughout the Sixth Five-Year Plan is shown in Table 5.

Table 5. Outline of the Development of Livestock Inventories for the Year 1980 and the Sixth Five-Year Plan

Ukazatel (1)		(2) Stav k 1. 1.			Index 1981/78
		1981	1980	1978	
Skot celkem (3)	ČSSR	5 001 574	4 914 784	4 554 803	109.8
	CSR	3 498 785	3 428 954	3 205 234	109.2
	SSR	1 502 809	1 485 810	1 349 569	111.4
z toho krávy (4)	ČSSR	1 801 719	1 803 305	1 802 942	99.9
	CSR	1 317 090	1 318 952	1 322 971	99.8
	SSR	584 623	584 353	579 971	100.8
Prasata celkem (5)	ČSSR	7 893 813	7 588 281	6 883 312	114.1
	CSR	5 105 488	4 788 832	4 278 445	119.4
	SSR	2 788 324	2 799 329	2 604 867	115.8
z toho prasnice (6)	ČSSR	572 088	585 101	508 844	112.5
	CSR	388 414	384 820	324 878	113.4
	SSR	203 672	200 281	183 966	110.9
Ovce celkem (7)	ČSSR	808 877	875 604	804 510	113.1
	CSR	307 771	290 114	258 024	120.2
	SSR	801 806	585 280	546 486	108.7
z toho bahnice (8)	ČSSR	432 774	408 887	388 372	117.5
	CSR	112 408	104 708	83 382	134.8
	SSR	320 365	305 181	284 980	112.4
Drůbež celkem (9)	ČSSR	47 282 882	48 350 823	40 129 780	117.8
	CSR	31 472 029	31 828 088	28 681 435	118.8
	SSR	15 810 883	16 424 727	13 648 355	115.8
z toho slepice (10)	ČSSR	22 383 074	21 845 723	20 801 508	107.1
	CSR	14 825 553	14 580 711	13 898 891	107.4
	SSR	7 457 521	7 255 012	7 002 517	106.5
Koně (11)	ČSSR	44 889	48 751	62 451	71.9
	CSR	24 400	24 788	30 508	80.0
	SSR	20 489	21 963	31 945	64.1

Key:

- |                          |                    |
|--------------------------|--------------------|
| 1. Index                 | 9. Poultry, total  |
| 2. State as of 1 January | 10. including hens |
| 3. Horned cattle, total  | 11. Horses         |
| 4. including cows        |                    |
| 5. Hogs, total           |                    |
| 6. including sows        |                    |
| 7. Sheep, total          |                    |
| 8. including ewes        |                    |

All the planned inventory indices for 1980 have been met and exceeded except for cow inventories. In comparison with the same period of 1979, increasing of inventories of all livestock met with success with the exception of cows and poultry. The relative shares in the increase of horned cattle inventory are 55 percent calves under 6 months old, 19 percent heifers over 6 months old, 26 percent bulls and oxen over 6 months old undergoing fattening. The inventory of bulls in fattening increased almost 4 percent in comparison to 1980.

An increase in the inventory of hogs became essentially reflected only in the development of the hog herd in the CSR. A lower increment in the number of sows caused a disproportionate increment of hogs in the CSR in comparison to the need for meeting the planned quota for increasing the natality of piglets.

In the relatively favorable development of the inventory of sheep, which increased by 34,300 animals, a share of more than 66 percent goes to ewes. An increase in the inventory of ewes creates the prerequisites for a higher rate of reproduction in sheep breeding in the current year. From the overall increase in the inventory of sheep, 36.6 percent accrue to the socialist sector and 63.4 percent to all other breeders.

Development of livestock production in the Sixth Five-Year Plan leads to further stepping up of its intensity (Table 6).

Table 6. Outline of Development in Intensity of Livestock Production During the Sixth Five-Year Plan (in Regions and Republics)

(1) Kraj, republiky		(2) Na 1 ha zemědělské půdy						(3) Na 1 ha orné půdy					
		jatečná zvířata celkem <sup>1</sup>		jatečný skot		mléko		jatečná prasata		jatečná drůbež		vejce	
		(4) kg	(5) kg	(6)	(7) kg	(8) kg	(9) pcs						
		1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980
Středočeský	1	244,5	283,8	105,2	114,7	777,5	871,8	159,7	194,8	28,8	38,0	527,0	597,4
Jihočeský	2	219,4	253,3	104,2	114,2	738,5	848,4	158,9	190,3	40,5	51,8	488,1	544,8
Západočeský	3	184,7	204,9	94,7	99,2	738,8	793,8	127,3	147,3	28,2	40,4	503,5	573,4
Severočeský	4	183,8	190,9	90,5	85,1	838,2	685,4	127,8	146,2	39,5	57,1	651,9	837,5
Východočeský	5	238,8	278,1	108,4	117,5	950,9	1045,7	188,2	207,0	37,8	51,3	551,9	614,5
Jihomoravský	6	251,4	298,1	109,0	123,3	751,8	888,7	170,7	208,0	36,3	49,3	485,0	514,1
Severomoravský	7	210,4	248,0	100,0	114,4	750,5	892,3	140,4	171,9	33,5	50,5	443,4	532,3
Západoslovenský	8	240,8	383,1	85,1	91,8	803,4	741,6	182,8	224,2	36,3	49,7	381,2	462,3
Středoslovenský	9	118,1	137,3	81,2	81,0	372,8	485,6	112,2	173,6	38,5	57,7	481,8	563,8
Východoslovenský	10	123,8	133,7	69,2	81,8	359,2	417,1	88,1	124,0	35,2	58,8	318,6	473,7
CSSR	11	204,0	234,1	92,1	97,9	857,0	755,8	150,0	188,5	38,2	50,8	470,5	554,7
CSR	12	224,4	258,0	103,1	112,3	771,9	870,7	153,7	188,2	38,1	49,1	511,9	587,3
SSR	13	188,9	193,1	73,3	73,2	459,8	558,3	142,5	187,4	38,5	53,7	385,2	485,2

Key:

- |                      |         |  |
|----------------------|---------|--|
| 1. Region, republics |         | 2. Per hectare of agricultural land            |
| 1 Central Bohemia    | 11 CSSR | 3. Per hectare of arable land                  |
| 2 Southern Bohemia   | 12 CSR  | 4. Livestock for slaughter, total <sup>1</sup> |
| 3 Western Bohemia    | 13 SSR  | 5. Horned cattle for slaughter                 |
| 4 Northern Bohemia   |         | 6. Milk  |
| 5 Eastern Bohemia    |         | 7. Hogs for slaughter                          |
| 6 Southern Moravia   |         | 8. Poultry for slaughter                       |
| 7 Northern Moravia   |         | 9. Eggs  |
| 8 Western Slovakia   |         |  |
| 9 Central Slovakia   |         |  |
| 10 Eastern Slovakia  |         |  |

<sup>1</sup>Not including poultry

## Quotas of Production for the Market of Key Livestock Products in the First Year of the Seventh Five-Year Plan

In comparison with the situation attained in 1980, the quotas for procurement of animals for slaughter are lower by 13,000 t, i.e., 0.8 percent. Procurement of milk is being increased 37.1 million l, i.e., 0.7 percent. Procurement of hogs for slaughter should decrease 28,500 t, but that of horned cattle is to increase 16,100 t. The plan quota for market production of poultry for slaughter is lower by 13,200 t, i.e., 5.4 percent and eggs by 23.2 million, i.e., 0.9 percent. The plan adaptation is in conformance with measures for economy in the use of nutritive fodders.

The development of inventories of horned cattle and hogs undergoing fattening forms a solid basis for achieving the annual quota in procurement of animals for slaughter. An increment in the market production of horned cattle for slaughter in 1981 and the subsequent years of the Seventh Five-Year Plan will, however, call for implementation of extraordinary measures designed to promote effective utilization of inventories undergoing fattening and increasing their numbers. Procurement of horned cattle for slaughter in agricultural enterprises will have to be oriented toward attaining an average slaughter weight of horned cattle, to include cows, of a minimum 480 kg in the CSR and 469 kg in the SSR. This will require prevention of removing from stock of horned cattle not ready for slaughter.

8204

CSO: 2400/291

STRUCTURE, OPERATION OF PUMPED STORAGE STATION DESCRIBED

Leipzig ENERGIE-TECHNIK in German Vol 31 No 7, Jul 81 pp 243-246 manuscript received 3 Dec 80

[Article by Manfred Hempel, Dresden; member, Chamber of Technology (KDT), VEB Combine for Power Plant Construction, East Berlin: "The Markersbach Pumped Storage Station--A Modern Peak Load Plant in the GDR Energy Industry"]

[Text] The Markersbach Pump Storage Plant was built in the upper Erzgebirge [Mountains] in the cavern design with a total final capacity of 1,050 Mw and an individual machinery unit output of 175 Mw. The plant is used for storing surplus electric energy during low-load times, for the preparation of peak-load availability during times of heavy electric energy needs, and besides, it is available as quickly ready reserve for the interconnected electric energy grid. Commissioning began in 1979 and will be completed in 1981.

1. Introduction

This article gives an overview of the design and arrangement of the most important structural components and systems in the Markersbach Pump Storage Plant (PSW). It is intended to promote a better understanding of the special problems of high-intensity-current engineering, safety-engineering, and automation plants covered in four other articles in this issue.

The location of the Markersbach PSW in the upper Erzgebirge was selected as a result of a competition "on the collection of proposals for the erection of pumped storage plants" launched in 1961 by the KDT (Chamber of Technology).

The site's advantages reside in the following:

The relatively great fall head,

The topographic conditions for the construction of an upper storage basin with optimum basin shape, for blocking the Middle Weida Valley for the lower storage basin, and the relatively favorable surface area availability for construction site establishment and above-ground installations,



The favorable geological conditions for the erection of the propulsion water pipelines and the machinery control room,

The comparatively low expenditures for clearing the construction site, as well as preliminary and replacement investments,

The good possibilities for connection with the interconnected power grid.

## 2. Investigation of Variants and Planning of Markersbach PSW

The following were started in 1964 on the basis of a study:

A more detailed geological reconnaissance,

The surveying of the site and the preparation of topographic maps on a scale of 1:1,000 and

Studies of alternate solutions.

The latter first of all covered above-ground power-house designs and were concentrated on the following:

Optimum size of machinery units,

Start-up and braking system,

Economical water diversion during construction time,

Possible division of upper storage basin,

Sealing the upper basin.

This effort included considerations on savings of construction capacity and imported components and the study of alternate solutions was expanded to include a cavern solution. The following problems were taken up, among others:

Cavern in upper or lower location,

Lining the propulsion water pipelines,

Need for separate caverns for globe valves, transformers, and control systems,

Development of drainage plant.

The overall concept developed from that was confirmed in 1967 and became the foundation of further preparations and practical implementation.

### 3. Engineering Concept, Design, and Structure of Plant

#### 3.1. General Remarks

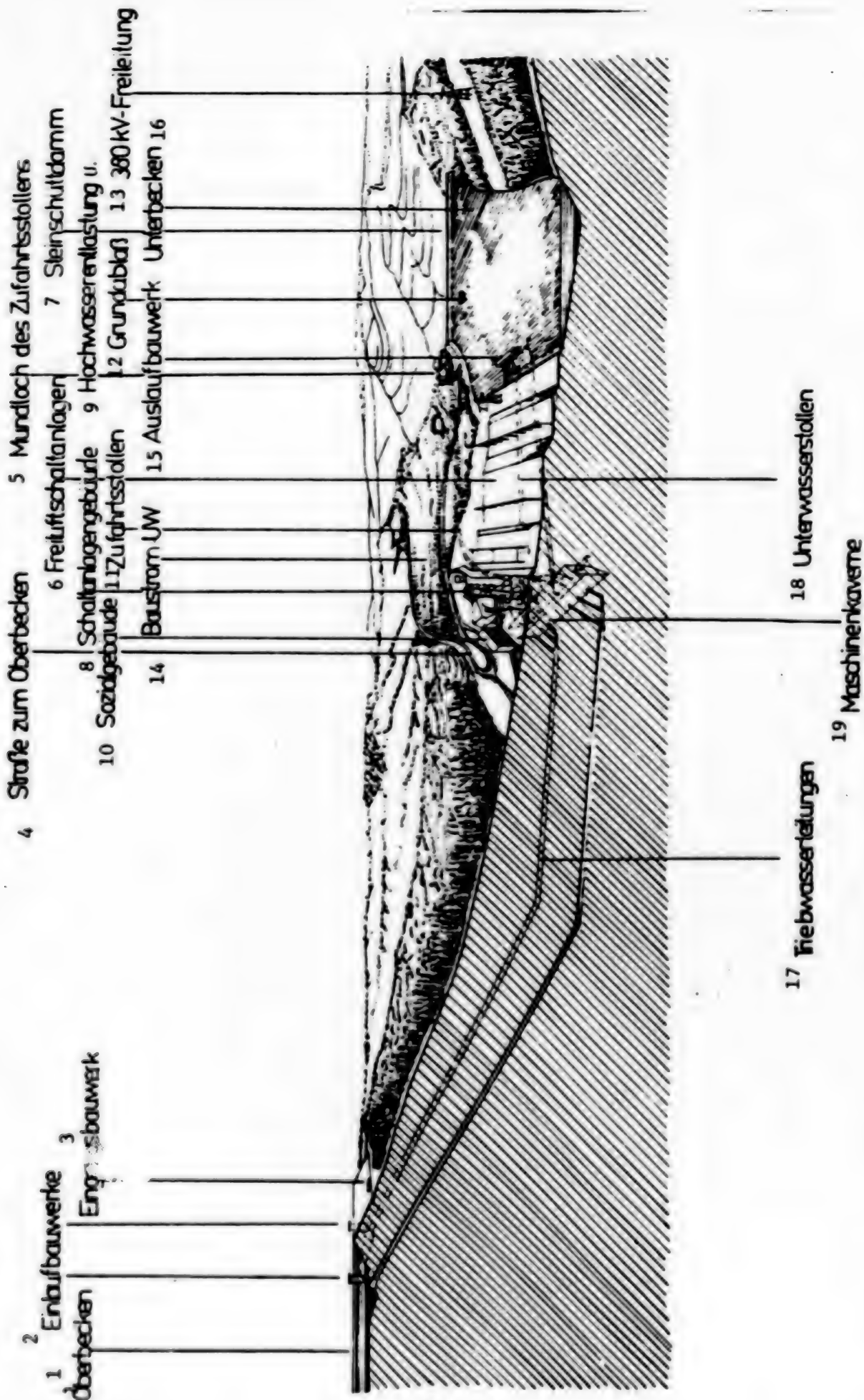
The plant was erected at an elevation between 500.00 m above sea level and 850.00 m above sea level. It was equipped with six pump turbines of 175 Mw  $\approx$  1,050 Mw, each. The maximum output during turbine operation is 1,176 Mw; the starting output during pump operation is between 1,092 and 1,260 Mw. This gives us an adjustment spread of about 2,200 Mw. The average fall head is 287 m; the work capacity of the upper storage basin, with the entire storage volume fully utilized, is 4.0 Gwh. When all machines are used, we get a basin emptying time of about 4 hours and a basin filling time of about 5 hours. The guaranteed efficiency for the entire plant is 71 percent.

#### 3.2. Design and Structure of Plant Division

Figure 1 shows an overview of the most important plant divisions.

[See following page for Figure 1]

Figure 1. Overall arrangement of pumped storage plant. Key: 1--Upper basin; 2--Intake structures; 3--Intake building; 4--Road to upper basin; 5--Inlet opening of access tunnel; 6--Open-air [outdoor] control systems; 7--Stone embankment; 8--Control systems building; 9--High-water drain; 10--Recreation building; 11--Access tunnel; 12--Underground drainage outlet; 13--30-kv overhead line; 14--Construction current, substation; 15--Outlet building; 16--Lower basin; 17--Propulsion water pipelines; 18--Underwater tunnel; 19--Machinery cavern.



[See caption to Figure 1 on preceding page]

### 3.2.1. Lower Storage Basin

This basin was made by damming the middle Weida as a valley dam with a useful content of 6,159,000 m<sup>3</sup>. The dam structure is a stone embankment with a bitumen outside seal, a cubic volume of 842,000 m<sup>3</sup>, and a sealing surface of about 23,000 m<sup>2</sup>. The length of the dam top is 390 m, the width of the dam base is 208 m, and the dam height is 53.5 m. When all six machines are used, we get a reservoir storage level fluctuation of up to 20.7 m.

Connected to the dam we have the ground drainage structure with flood-water drainage system for 1,000-year flood water. Connected in front of that we have coarse and fine screens. In case of damage, they can be replaced by emergency screens which can be floated in with the help of a cargo barge. At the end of the first third of the lower basin, we have the drainage structure for the underwater tunnels with a height of about 39 m. Dam bars are provided as closing members and they are inserted into the screen recesses, when necessary, with the help of a full portal crane.

### 3.2.2. Cavern Including Access Tunnel

The mining job involved in the cavern came to about 150,000 m<sup>3</sup> with a length of 146 m, a width of 24 m, and a height of 43 m. In the cavern we have the machinery units, consisting of pump turbines, synchronous machinery, start-up motors and blocking members as well as the auxiliary machine and electrotechnical systems. The machinery control system, the in-house requirements main switching system, and the control stand as such are outside the cavern.

Horizontally, the cavern is subdivided as follows:

The east assembly block,

The middle block,

Six machinery blocks with three machines, at a time, being combined into a half-plant,

And vertically into five floors.

By way of hoisting equipment, two main cranes, with a carrying capacity of 1.57/0.39 MN and two auxiliary cranes of 49 kN have been built in. To lift the heaviest construction component (the rotor of the synchronous machine, weighing about 305 t) the two main cranes were connected with a cross-beam.

We determine the cross-correlation function with the help of the relationship:

In the east assembly block, we have four central fan units for cavern air conditioning on floors 4 and 5. Floor 2 constitutes the preliminary assembly surface for the synchronous machines. All floors can be reached via a passenger elevator from floor 1.



The auxiliary and secondary systems not directly connected with machinery are located in the middle block. They include mainly the following:

On floor 1:

The day-rooms and sanitary facilities for operating and maintenance personnel;

The access tunnel also comes out on floor 1; the open surface is used for trans-loading equipment from road vehicles to the cranes and for intermediate storage; besides, the preliminary assembly of the scroll cases of the pump turbines was accomplished there;

On floor 2:

General in-house requirement systems, 10 kv and 380 v AC as well as 220 v DC for the cavern division and one, each 220 v and 60 v DC batteries;

On floor 3:

Cable rooms for the electrical systems on floor 2;

On floor 4:

Oil systems, basin filling pumps--in the same place, later on, an emergency power unit, one DC battery, 220 v and 60 v, each;

On floor 5:

Condenser plant for blower air, seepage water pump system and cooling water pump system.

The individual floors are connected by a passenger elevator also in the middle block.

Figure 2 presents an overview of the middle block.

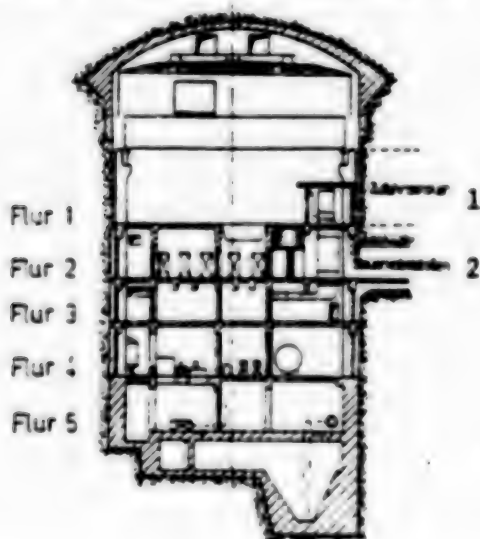


Figure 2. Cross-section of middle block.  
Key: 1--Access tunnel; 2--Control cable tunnel; Flur--floor [level].

The machinery blocks extend over all floors, starting with the suction pipe on floor 5. On floors 4 and 5 we have the pump turbine including the globe valve and the compressed-air tanks; on floor 2 we have the synchronous machine and floor 1 we have the start-up motor and the automation systems. Besides, we also find here the auxiliary and secondary systems which are connected with the machinery.

Figure 3 shows the basic setup.

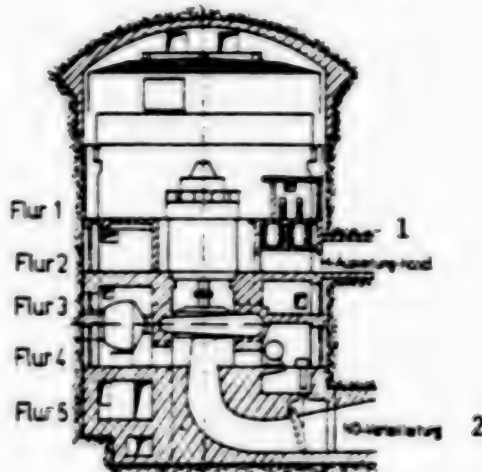


Figure 3. Cross-section of machinery block. Key: 1--Machinery [middle?] evacuation duct; 2--Low-pressure distribution; Flur--floor.

The pump turbines are equipped with a Francis flywheel. Depending upon the static fall head, the actual output during turbine operation is 106-196 Mw; the power required for pump operation--in case of reversal of direction of rotation--is 182-195 Mw at a standard rpm of  $375 \text{ min}^{-1}$  and a water flow rate of  $75 \text{ m}^3/\text{sec}$  or  $64 \text{ m}^3/\text{sec}$ . The blocking on the high-pressure side is accomplished by means of globe valves and on the low-pressure side by means of valve locks in the suction pipes. The hydraulic machine is rigidly connected with a synchronous machine which is designed for an apparent power of 220 Mva at  $\cos \phi = 0.8$  and with a terminal voltage of 15.75 kv. Start-up during pump operation is accomplished by means of the start-up motor with a standard output of 13.5 Mw. For control purposes, the pump storage units are fully automated.

By means of a corresponding arc shape in the roof vault, a system of prestressed rock anchors, and permanent structural control systems, the cave in the rock is so secured and watched that static safety is guaranteed over a period of at least 100 years.

The cavern can be reached through elevators in the control cable shaft and in the machinery evacuation shafts. The shafts furthermore contain staircases or ladders. Access is provided via an access tunnel of 800 m length.

### 3.2.2. Propulsion Water Pipelines and Underwater Tunnels

Between the upper storage basin and the cavern we have two propulsion water pipelines underground with a diameter of 6.20 m. The average length is about 1,060 m, with a steep portion of about 650 m with  $30^\circ (= 57.74 \text{ percent})$  and a flat portion of about 410 m with 8 percent gradient. The pipelines are lined with steel, having a

wall thickness of 16-45 mm. The dimensioning was based on the supporting carrying effect of the mountains and the concrete back-filling. A force-locking connection between steel and concrete and rock is provided through injections. Three machines, at a time, are connected to the propulsion water pipeline by means of high-pressure distribution pipelines. The connection between the cavern and the lower basin is provided by two, about 330-m long underwater tunnels, each, with a diameter of 8.70 m and a gradient of about 11 percent. Here again, three machines at a time are connected to a tunnel via armored low-pressure distribution pipelines. The tunnels themselves are lined with B-300 concrete. The opening into the lower basin is located at the drainage structure (see Section 3.2.1).

To increase the static and operational safety, the steel armoring was provided on the inside with high-grade corrosion protection.

#### 3.2.4. Upper Storage Basin

The upper storage basin was formed as a man-made basin with a useful energy content of about 6 million  $\text{m}^3$  in a mass adjustment on a mountain top through a combined stone and earth embankment and it was sealed with bitumen-concrete. The dam's cubic volume is about 3,020,000  $\text{m}^3$ ; the length of the dam top is about 2,590 m, the width of the dam base is 80-100 m, and the height of the dam averages 18 m. When the storage capacity is fully utilized, the segment fluctuation comes to as much as 15.10 m. To detect and check on possible seepage water, a 1,100 m drainage tunnel is arranged below the bottom in the middle of the basin. Running from the inlet structure it simultaneously serves as access tunnel for the two intake buildings. They are located in the basin, directly above the upper intake openings of the propulsion water pipelines. As locking member, one sluice gate, each, has been built in. Screens are provided directly at the intake.

#### 3.2.5. Above-Ground Facilities and Shafts

A 30-kv and a 220-kv outdoor control installation was erected at the lower basin for energy supply and evacuation. Connections are established with the 30-kv grid and the 220-kv grid via one double line, each. The machine control panels, the in-house requirement systems, and the control stand are housed in a separate building (see Figure 1). The 235-Mva block transformers are located directly next to that building.

Connection with the cavern is accomplished via two machinery drainage and ventilation shafts with a depth of about 90 m and a diameter of 6 m. A third shaft with a diameter of 6.90 m was dug for the control cable connections between the control stand and the cavern. A shaft, previously dug for geological exploration, is used to ventilate the below-ground installations.

An administrative and recreation building was erected at the lower basin for the plant management and for personnel support. The control building can be reached from that building via an enclosed connecting bridge.

#### 3.2.6. Control and Measurement Systems

The buildings at the Markersbach PSW are monitored by means of conventional-geodetic and modern remote-measurement methods. This facilitates situation controls at the

dams, level-reduction and inclination observations, as well as the measurement of the water pressure along the bottom and the stresses in the mountains and in the inserted structural concrete elements. The measurements are made by means of frequency comparison methods based on the oscillating cord method. The measurement figures are transferred to a measurement center where they are recorded and collected for analysis.

#### 4. Summary

On the basis of favorable topographic and geological conditions and the possibility for insertion into the interconnected electric power grid, a pumped storage plant was erected at Markersbach in upper Erzgebirge. With a final output capacity of 1,050 Mw in turbine operation and individual machinery output capacities of 175 Mw, as well as the use of pump turbines, it will be one of the biggest and most modern pumped storage plants in Europe after completion.

The plant's significance springs from the following:

The supply of peak-load energy during times of maximum electric energy need,

Use of the basic load power plant during low-load times through pump operation,

Rapidly usable reserve in case of breakdowns in the base-load power plants, in case of major consumers, or in the interconnected electric power grid, as well as in case of major load change speeds in the grid.

The lower basin was formed by closing off the Middle Weida River while the upper basin was built as a man-made basin. The machinery unit is housed in a cavern. Connections to the storage basins are provided by underground propulsion water pipelines or underground water tunnels. Energy is supplied and evacuated via outdoor switching installations and 380-kv as well as 220-kv overhead lines.

Modern control measurement systems are used for safety-engineering surveillance of the above-ground and below-ground structures.

The plant's commissioning was started in 1979 and will be completed in 1981.

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5058

CSO:2300/305



DEVELOPMENT OF NON-RUBLE FOREIGN TRADE ACCOUNTS EXAMINED

Budapest FIGYELO in Hungarian No 29, 22 Jul 81 p 2

[Article: "The Balance During the First Half Year"]

[Text] This year's plan, like last year's, has made the improvement of the national economy's balance position, and primarily the foreign trade balance the chief task of economic effort. The goal of improving the foreign trade balance in ruble accounting trade is the reduction of the balance deficit; in the non ruble accounting trade, the goal is [trade] balance equilibrium.

During the last period of our foreign trade, the beginning of the year--we are referring to the first quarter--our non ruble accounting trade was quite favorable. Compared to the same period last year, imports decreased while the forint value of exports increased by a few percent. During the first quarter of the year--we have had no example of this in a long time--non ruble accounting trade closed out with a small favorable balance. However, the export-import dynamics of the second quarter turned out to be quite different. The final result of the first half year was characterized by the continued increase of the initially low import volume, while the dynamics of the export growth progressively declined up to mid-year. However, the first and second quarters, which differed in import-export development and dynamics, achieved a nearly balanced equilibrium state when combined. To be more precise, the amount of import surplus in the non-ruble accounting trade during the first half was less than it was the year before.

Not only the value, but also the volume of non-ruble accounting imports increased significantly. (In industrial consumer goods, spare parts, food industry raw materials and foodstuffs, among other things.) This fact is noteworthy because the stagnation of the non-ruble accounting imports in 1980 decidedly influenced and shaped the balance situation in 1980, while this half year's totals were favorable--more favorable than during the same half in 1980, despite a greater volume and amount of imports.

As far as the balanced export components of the near equilibrium trade balance are concerned, the results discernable in the greater export performance of the Hungarian economy are such that while they are noteworthy facts in themselves, they are at the same time indicative of the temporary and chronic shortcomings in non-ruble accounting exports. The export growth of the first half year was

due totally to agriculture and the food industry. But even this statement needs to be elaborated. The foreign currency return of the non-ruble accounting exports, which exceeded that of the first half of 1980, can be credited to wheat, meat and vegetable oil exports. (Good harvest, relatively favorable price levels and newly engaged capacities). The industrial performance did not reach the level of the same period last year.

Non ruble accounting exports for the first half year were widely differentiated by industry branch and merchandise category. Machine and light industry exports stagnated at the base period level. Metallurgy exports declined significantly because of unusually unfavorable marketing and price conditions. Because of depressed prices, the aluminum industry also held back exports during the first half year. In the chemical industry there are examples of products whose exports increased, stagnated and declined. The export volume and value of artificial fertilizers increased significantly, while that of plant protection agents and PVC declined because of unfavorable market and price conditions. The export decline, or rather, the withholding of exports of metallurgy, aluminum industry and PVC products during the first half of the year is understandable, since the maintenance or increasing of the previous export levels would have resulted in significant losses. However, the export stagnation of the processing industry--machine and light industries--cannot be attributed to the "account" of unfavorable market conditions exclusively.

The volume of processing industry exports stagnated already last year. The continuation of this trend suggests that the marketability and competitiveness of processing industry products, and the flexible and rapid adaptation of production to market demands remains unsatisfactory. The slight increase in industrial production during the first half year was based on scheduling ahead and overfulfillment on domestic orders.

During the January-April period, for example, the machine industry's total sales--based on comparable prices--increased by 6.2 percent, but domestic sales by 13 percent. In light industry, total sales increased by 4.8 percent while domestic sales increased by 7.6 percent. In chemical industry, total sales increased by 5.4 percent, and domestic sales by nearly 19 percent. It is common knowledge that the production of the previously mentioned industry branches stagnated or decreased during last year. During the first half of this year, however, their production increase was higher than the industry average by about 3 or 4 percent, but hardly because of increased foreign market sales.

From the standpoint of achieving and maintaining [trade] balance equilibrium, on which market we realize the export increase has no particular significance. (In this respect, market policy, price and transportation cost considerations are primarily to be weighed.) From the perspective of the marketability of our non ruble accounting exports, however, the observation that very little of our export growth is in the direction of developed industrial countries is not unimportant. This calls attention to the fact that products which are easily salable on "all markets"--let us be more specific, on the markets of developed capitalist countries--continue to be in scarce supply in our export structure.

It appears at first glance that the rather favorable balance of the non ruble accounting trade at the end of June has created a better position for accomplishing the main tasks of our economic effort than existed at the same time last year. However, it is also a fact that the maintenance and possible improvement of the near equilibrium status will be exceedingly difficult. While the stock of foreign trade orders in early July is larger in volume than it was during the same period last year, it is hardly sufficient--especially in processing industry exports--to be the foundation of the growth dynamics necessary for a balanced trade equilibrium. During the first half year, the favorable exchange rates were also a positive influence on the balance situation. During the second half though, a worsening of the terms of trade can be expected. It must be also expected that the export growth rate for agriculture and the food industry will decrease during the second half of the year, and will not be able to supply the necessary non ruble accounting surplus export by themselves. Naturally, other unexpected factors detrimental to the maintenance and improvement of the balance situation may also accrue along with the expected ones. Even without these, it is apparent that the exports of the processing industry will have a key role in the development of the balance situation of non ruble accounting exports during the second half year. Moreover, this is an absolute condition for the development of this year's industrial production, since domestic sales can hardly be increased throughout the remainder of the year, and the opportunities in ruble accounting exports are also limited. The processing industries can develop and expand their production only through increasing the volume and returns from non ruble accounting exports. It is still an open question whether willingness and capacity will team up with economic constraint.

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CSO: 2500/325

## HUNGARY

### BRIEFS

**NEW ALUMINUM FOUNDRY**--At a cost of 577 million forints the Ajka Alumina Factory and Aluminum Foundry has built a new casting facility. The new facility will produce 2,700 tons of casting annually thereby increasing production, when combined with output of the existing foundry, to 4,000 tons of aluminum castings annually. The new facility utilizes the very latest technology: Through the offices of the Chase World Information Corporation which acted as intermediary, its main cooperation partner is the Advance Pressure Casting firm. Not only is the latter helping to organize operations and taking part in shipping various types of production equipment but it is also participating in the export sales of 2,700 tons of castings annually. Manpower for the new facility was obtained through internal regrouping and retraining of workers. The plant already has such notable customers as General Motors, Telefunken, Volvo and the firm, Black and Decker. [Budapest NEPSZAVA in Hungarian 24 Aug 81 p 4]

**PROBLEMS OF ELECTRICAL MACHINE INDUSTRY**--The electrical machine industry is losing a substantial volume of trade as a result of the tense situation in the Middle East. This market is buying far fewer refrigerators, washing machines, electrical appliances and power plant equipment from us than it originally planned. Hungarian enterprises are taking numerous steps to offset such losses in non-ruble accounting trade through long term deals with certain Western firms. The Ganz Electrical Works, the Electrical Equipment and Appliance Works and several other enterprises are pushing so-called third market cooperation on the basis of mutual benefit with certain West European firms. EVIG (United Electrical Machine Factory) has set up close cooperation with the American Gettys firm in increasing production of certain machine tool components as well as manufacture of special pumps. A joint enterprise has been set up under the name Sphero-EVIG, and production has already begun at the Cegled plant. Products resulting from the cooperation will be sold on non-ruble accounting third markets by the Swiss Vortex AG. This deal results in a profit of 30 percent. HIM (Hajdusag Industrial Works) is negotiating a noteworthy agreement with the AEG Telefunken firm of the FRG. Under the terms of the present agreement HIM is producing 40,000 Mini and Midimat automatic washing machines on the basis of a Telefunken license. Actually, HIM has an annual capacity for 100,000 such machines. Of the 40,000, 15,000 are shipped to capitalist markets. The FRG firm also assembles 40,000 such machines yearly. Heads of the two firms are discussing the possibility of having HIM take over the entire production of Telefunken washing machines. This would increase export of said machines to capitalist countries to 55,000 units per year and yield an additional income of 10 million-12 million dollars to the national economy and would utilize the capacity of HIM nearly to the full. [Summary] [Budapest NEPSZAVA in Hungarian 24 Aug 81 p 4]

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## SOLUTIONS TO ECONOMIC CRISIS REVIEWED

Warsaw ZARZADZANIE in Polish No 3, Mar 81 pp 2-6

[Article by Janusz Goscinski: "How to Get Out of the Crisis"]

[Text] A large group of people, simply an enormous machine, was activated to prepare what are actually some very general assumptions on economic reform. These assumptions were then discussed in the workplaces, in the professional circles, and in the schools. One part of the assumptions was devoted to the economic prerequisites for reform. The authors correctly stated that if the reformed principles for the planning and functioning of the economy are to be effective, a social and economic policy that will enable mechanisms to really function is indispensable. These mechanisms, how they operate and reveal themselves in economic life, were not, in the reform assumptions, defined clearly, nor--I would say--even in a confused way. However, I will deal with this problem in the next article. Here I would like to dwell on another, but equally important subject.

Thus carrying the basic thought further, it should be said that the odds for effectively activating economic mechanisms, i.e., the planning and functioning of the economic center and organizations, require that the acute sore points in the economic organism or, in other words, the acute conditions of economic imbalance, be alleviated.

This is an extremely important prerequisite. It represents the viewpoint--contrary to the position of many economic activists, especially those at the highest levels--that the introduction of reform principles and regulations cannot be based on the stipulation of recovery of economic balance. Putting it differently, there is no logic, in my opinion, in the reasoning:

**First Balance, Then Reform**

Such a position is unacceptable, both on the part of the community as well as from the economic standpoint. It is, in fact, based on the "tacit" assumption that no reform will result from such a position, for the initial requirement will not be met until 4 or 5 years have passed.

But on the other hand, it is essential that conditions be created for gradual recovery of economic balance, by initiating and consistently activating processes that will reduce imbalance and tensions in various fields of economic life. Reform cannot be effectively applied if there is unceasing, deep, structural imbalance. Therefore, neither can any logic be found in this approach: /First reform, then recovery of balance/ [in boldface].

Both approaches should be rejected as extreme. This, then, means that a search for realistic and effective solutions is necessary.

What should such an approach and solutions (composed of variants) contain?

I believe that there should be conditions for a /self-stimulating system, [in bold-face], that follows a growth-rate recovery spiral. And what does such a vague expression mean when translated from professional jargon into Polish? It means that:

-- first, measures must be undertaken which will cause the economy to "start", at which time unfavorable trends will be halted (e.g., continued decline in national income, labor productivity, export production, etc.) and, in a particularly good case, a gradual favorable trend will begin;

-- the "start", the movement from place, will activate some economic processes and mechanisms anticipated in the reform (after it has been radically changed in comparison with the discussed assumptions), which will accelerate these processes and tendencies toward improvement, toward growth in economic efficiency;

-- the strengthening of favorable tendencies by the activated mechanisms will produce successive "slight accelerations" of desirable economic tendencies and this will make the economic mechanisms more effective

and so on!

Thus the "acceleration" rate, starting from a minimum, almost imperceptible amount, would "grow" due to the spiral: halting of decline--activation of economic mechanisms (principally the market)--appearance of a growth rate--stimulation of mechanisms--acceleration of growth rate, etc.

The "growth rate spiral", described in such a, let us say, essay way, appears to be a simple, indeed a "natural", mechanism. And it could be, if we

-- knew how to activate it, instead of struggling with desperate attempts at ad hoc measures,

-- would support it, or possibly not interfere with the processes provoked by correctly constructed parameters and regulators (e.g., prices, interest rates, tax rates, etc.).

But unfortunately we do not know how to activate it! For too many years the economic center activated planning-bureaucratic mechanisms that destroyed the living tissue of the self-regulating processes. For too long it has applied primitive methods for activating simple measures (and economic systems) to manage highly complex, conjectural, uncontrollable (to the expected degree) processes and structures. The center believed, and continues to believe, that it is dealing with processes that are fully describable, observable, and, as I have already emphasized, controllable.

Thus we must learn this "along the way", attempting to repair what we so systematically and effectively damaged. The fact that we do not even know what to call

these mechanisms is shown by the reform assumptions, where not even one control process was called by name, which indicates that the assumptions are of a sloganistic and not of an instrumental nature.

The reply to the question on how to get out of the crisis is therefore the reply to the question: To be or not to be. And this is no exaggeration.

#### On Some Proposals

Prof Stefan Kurowski sees the principle "culprits" of the crisis in the policy of advocating exports in recent years, in connection with improvements in terms of trade which resulted in a catastrophic depletion of the domestic market (see PRZEGLAD TECHNICZNY-INNOWACJE, 1980, No 51/52, pp 8-9) and growth in imports-intensiveness, both of investments and production from the second payments area [capitalist countries], which, with the stubborn adherence (in Kurowski's opinion) to the principle of paying off these credits and the current costs of these credits, produced an indebtedness spiral, while at the same time it preserved the illusion of a "good" payer, as Poland always was and wishes to remain. As a result of these and other elements of economic policy, faulty material structures appeared which would have to be changed through conversion, using an investment maneuver for means of consumption.

Kurowski's proposal can be arranged in a four-stage sequence of actions which must be taken to solve the crisis.

The first stage is a moratorium on payments (and, I believe, on the interest, for its share in the payments in 1981 and subsequent years plays an increasingly larger role). The second stage would consist of a gradual equalization of the trade balance in foreign turnovers, i.e., on balancing exports with imports. This would, in a third stage, give imports something of a "breather", facilitating a growth that, through imports of raw and other materials, would produce a growth in the degree of utilization of production apparatus. This, in turn, would lead to a growth in export opportunities which would improve market supplies and further accelerate the growth of exports. And here we are dealing with a quasi self-stimulating arrangement. The beginning of this process is a moratorium which is evaluated from the standpoint of the possibility of achieving, and not unilaterally suspending, solvency, so optimistically, in my opinion, that it borders on a banking "miracle". And this world does not acknowledge miracles, only cruel, cold, calculations and level-headed judgment.

Prof Czeslaw Bobrowski, in an updated report ("Into the Wastebasket", ZYCIE GOSPODARCZE, No 49, July 12, 1980), presented another concept, another totally different viewpoint.

The entire maneuver here can be divided into three stages which, as the author stresses, somewhat overlap in time. The first is based on recovering market balance, i.e., on supplying the people with nonrecurring and recurring consumer goods. After this would come the time for eliminating disproportions in development and utilization of manufacturing apparatus. First the disproportions in infrastructure would have to be eliminated, especially in energy and transport, which would take 3 to 4 years. Because the policy of the 1970's led to total disorder of the economy in its

inter-subsector and interbranch system (from this, apparently, came the sonorous name for this policy, the harmonious, proportional development), the second stage would also be based, along with the infrastructural problems, on putting it into order. Only then would the time for the third phase come, that of improving the standard and quality of life, i.e., the social infrastructure (education, health service, culture), the growth of real wages, investment, etc.

This simple scenario assumes as its starting point not so much foreign trade and the sphere of credits, as market balance, and especially the interests of the consumer. It is, therefore, more comprehensible to society, more attractive and more encouraging to better work as a moral equivalent for a better market. But this stimulation is very shortlived and could easily turn against its stage director. This scenario shows no real opportunity for solving the crisis in the beginning phase. The question, therefore, remains--how to move from dead center.

Nevertheless, I believe that both ways of getting out of the crisis, although intellectually appealing and quite consistent, insofar as dividing them into stages is concerned, are unrealistic and isolated from actuality. They may be regarded as wishful thinking.

The scenario must have a greater internal logic, more comprehensively considered pro's and con's, inhibiting factors and prospects.

#### The Subject of the Scenario

The starting point is the fact that economic imbalance has become transformed into a crisis, i.e., it has passed from shallow to deep, unceasing and structural economic imbalance.

The concept of economic balance belongs to complex categories, because, as in the case of complex functions, it is also a function of functions. It is comprised of many elements. Our economy has lost stability, i.e., its ability to maintain the value of the most important variables (e.g., growth rate of national income, size of investment, export-domestic market ratio, both in consumption as well as in supply, ratio of income from labor-retail prices-supply, and a threatening, rapidly growing inflationary curve) on a specified level or within the limits of acceptable boundaries. As a result, five markets can be named in which imbalance is unceasing, of long duration, and threatens to remain and further deepen if extraordinary measures are not taken. These markets are: consumption, investment, agriculture, foreign trade and labor.

On each of them there appear--frequently confused with one another or treated interchangeably--elements of economic and social policy with elements of functioning, with a faulty, crises-impelling central planning system, ineffective principles for stimulating and evaluating economic organizations, and an autocratic system of enforcing the social character of means of production.

Thus, mistakes in economic policy in the investment sphere have resulted in "overloading" the national income with investment and consolidating the disastrous material structure of the economy, about which I wrote earlier ("Strategy of Economic Development - Problems of Selection", ZARZADZANIE, 1980, No 5). In turn, the system of functioning led to disastrous inefficiency in investment processes and unbalanced



production, workforce, and power capacity. Planned costs and building cycles were exceeded and investigations were conducted on manufacturing capability. These are, we might say, two different horses pulling one cart, with one, the inferior and less disciplined one, sooner or later taking the lead over the other and frustrating the pulling.

The authors of the scenario of means and methods for recovering economic balance must, if the scenario is to be of instrumental value, do two things:

-- make an honest diagnosis of the sickness of a given market, describe its condition and the mechanisms which brought about this condition, and make a short-term forecast of the trends on this market;

-- find the interdependency (relationship) between that market and the others, attempting to find out which of them in the cause-effect relationship fulfills the role of causes, and where the effects of a specific policy, or of functioning, repeatedly appear.

The second is difficult--extremely difficult, for we have become accustomed to treating the processes occurring in the economy as simple and deterministic, whose behavior is the result of impulses. What delusions there were in store for us, and above all, this center, which M. Ostrowski and Z. Sadowski so clearly described in "Developmental Challenges", and which I was able even earlier to stress (ZARZADZANIE, No 11, 1979). Life is brutal, and especially economic life, where the longer economic laws are ignored the higher the price that is paid. The drama, however, lies in the fact that the center ignores the laws and society pays the price.

And so the economic process and the behavior of the economic systems are only partially observable and to a lesser degree controllable than even the "pessimists" would wish. Inflation, income from work and wages, the decline in cattle and swine population in the villages and labor productivity in the factories, are examples of processes which--if they were simple, i.e., with few variables and known relationships between them--would be easy to retain and correct. But they are not. And in the meanwhile, the center continues to act as if they were. The theory is even promoted that it would be easy to reverse the unfavorable tendencies if everything took place in an atmosphere of agreement, national accord, harmony, in a word--in a social Shangri-la. Gentlemen! Which moon are you living on? What has gotten into your heads? A social Shangri-la? No conflict, or putting them off until later for there are more urgent matters to take care of? For whom? For those, who for years have been paying for the successive errors and distortions? That is demagoguery, dictated, very likely, by fear for job, for immunity for voluntaristic manipulation of the economy!

Thus the task is difficult. But if we were to construct a square matrix relationship between economic categories in a form characteristic for indirect movement, i.e., if we were to include in the matrix the following categories:

-- production of consumer goods ( $P_C$ ),

-- production of capital goods and supply ( $P_{IZ}$ ),

- income from labor and incomes of economic organizations, including also private farms (Y),
- savings for consumption (postponed consumer demand  $O_C$ ),
- savings for production, i.e., investment, including also private farms ( $O_I$ ),
- consumer demand ( $D_C$ ) treated in the indirect movement as consumer expenditures on the market,
- investment demand ( $D_I$ ),
- investment used directly for consumption ( $I_C$ ),
- investment in group A means of production ( $I_A$ ),
- export of consumption means and goods ( $Ex_C$ ),
- export of investment and raw materials ( $Ex_{IZ}$ ),
- consumption import ( $Imp_C$ ),
- import of raw materials and investment ( $Imp_{IZ}$ ).

then it would appear that taking into account in the matrix only the direct dependencies among the listed categories, we obtain as the leading category, "leading" the others, income (Y), which on a 14-element diagonal has a so-called power equal to at least 8. The successive stimulators are: demand with the same force of reaction on the consumption sphere as on investment, and as the next factor--investment stimulating both spheres with the same force, now questionable due to the long-term violation of proportions and delays in the sphere of consumption investment.

The weak influence of savings results from the fact that both voluntary savings as well as those forced by faulty structure and supply quality, are not what they should be, i.e., a stimulus for development, but are a threat to both the consumer-goods and capital-goods markets. They hang over it! Their activation would cause a pressure that the economy could not cope with. And so in the present situation these stimulators of development have become threats to the economy. Therefore, savings reserves must be increased and frozen, i.e., the incomes must be withdrawn from the market. And the scenario must take this into account.

Let us now note and analyze what happened on the market in the context of incomes as the pointer on the scale of the present situation and the tendencies observed in the economy. At the turn of 1979 to 1980, the inflationary gap in the consumption sphere was established at about 80 billion zlotys. In the second half of last year, as a result of general wage increases, an average of 11 percent, the inflationary gap grew 60 to 70 billion zlotys and the growth tendency in 1981 will average about 40 billion zlotys quarterly. This means that without further wage increases, the current year will show a tendency towards the formation of an inflationary curve on a scale exceeding 200 billion zlotys if this process is not first halted and then slowly reversed.

The growth of incomes (Y) of the people (more precisely, urban and rural households) is not, what is worse, related to a growth in labor or to a growth in labor productivity, for this fell in 1980, or to an extensive growth of wages through a growth in employment. The growth in income from labor, and annuities and pensions, is the equivalent not of labor but of an increase in living costs. It is, therefore, almost entirely an inflationary growth, disorganizing the consumer market, if it can be disorganized any further. Hence we have the first unpopular proposal. Further wage increases /should and must/ [in boldface] be related solely to a /labor equivalent/ [in boldface] in 1981, and in my opinion, during all of 1982. The other side of the coin, however, is the supply of goods and services, its size and structure. What are the prospects here, if we refer to domestic production and its curtailment on the consumer goods market as a result of the need to export? And what are the prospects of importing consumer goods in the face of the present and galloping foreign debt? And how is the inflationary curve to be reduced by retail prices?

Everyone of these questions must be answered in the scenario. But I am not concerned here with presenting the situation on each of the five submarkets. I am concerned with the principles for constructing a scenario, which must be done, in order to see what the prospects are of emerging from the crisis.

#### A Method for Analyzing Problems and Prospects

I believe that each market should be examined after first describing the tendencies that exist in that market and their cause-and-effect connections with other markets in terms of improvement inhibitors and stimulating factors or conditions. I suggest that the scenario authors proceed in each field according to the following sequence:

- prepare a list of factors or conditions inhibiting the recovery of balance on a given market,
- determine the strength of the connections between the elements on this list,
- rank them from strongest to weakest (without attempting to weigh them precisely, which would require certain studies),
- prepare a list of stimulating factors or conditions and addressing them to the inhibiting factors (not necessarily in a 1:1 ratio).

#### Examples of Inhibiting Factors in the Consumption Sphere

- 1) growth in wage fund, retirement funds, scholarship funds, etc., or nominal wages; data on the present situation were given earlier, which in any case does not exhaust the entire matter,
- 2) inflationary curve, i.e., that part of the increases which has no equivalent in production and services, and that part of present wages which is not accompanied by a flow of goods and services, and also savings with an immediate requirement, which are a deferred consumer demand,
- 3) low, unadjusted retail prices for food articles and durable goods, causing great pressure on the market,

- 4) weak money of shrinking value, causing "flight" from the money which increases the pressure on the market and the purchase of all kinds of goods,
- 5) weak hoarding incentives, especially interest on savings and other deposits, and also so-called final deposits and prepayments frozen for long periods,
- 6) not tying wages and their growth (bonuses, plant funds, family allowances, etc.) to results of economic organizations, and the disrupting relationships: wages-work-productivity,
- 7) inefficient distribution of goods, inflexible division, rationing and allocations of bulk goods on a regional basis, contributing--aside from losses and thievery during transport--to reducing the already insufficient quantity of goods,
- 8) insufficient supply, due to lack of mechanisms other than planned assortment, serving to adapt the structure of supply to the structure of demand,
- 9) calamitous utilization of manufacturing apparatus and its potential capacity; in 1980 average utilization of industry's production capacity was established at about 60 percent,
- 10) low quality of many products, causing waste not only in the production phase but also in utilization (guaranteed repairs, exchange during the warrantee period, lack of spare parts, etc.).

The size of each of the factors given can be calculated (condition, resources, or intensity of flow).

The example given pertains to the first point in the method of preparing a scenario. Let us use another example.

Coordinating the Inhibiting and Stimulating Factors on the Investment Market.

This pertains to the last point in the method for programming a scenario.

1. Overloading the national income with investment. An inhibiting factor.

Comment: It is true that the rate of investment decreased in the second half of the 1970's, but it continues to be much too high for the national income, particularly in view of its drop in 1979-1980. This rate amounted to 28.4 percent of the income in 1975 and dropped to 23.4 percent in 1979. We may also, in the diagnosis, use a time series of investment outlays (if we assume 1970 as 100, then in 1975 they amounted to 115.2, fell in 1978 to 100.9, and in the following year to 92.3). It is worth noting that during 1976-1980, 2.1 trillion zlotys were committed in new investments, which exceeded the value of completed investment projects by 500 billion zlotys in the same period.

A. Maintaining the share of  $I$  in  $D_N$  during the years (a stimulating condition): 1981-1982 at the level of 15 to 17 percent  $D_N$  (in 1981 current prices), and in 1983-1984/5 an increase to 17-19/20 percent, which is caused by the fact that in



1980, freezing in incompleting investment projects amounted to over 750 billion zlotys and outlays indispensable for the completion of these investments would amount to 1.23 trillion zlotys.

Let us now note another component element of the calculation, given the inhibiting factor an arabic numeral and the stimulating factor a capital letter.

## 2. Unreasonable scope of investment. An inhibiting factor.

The investment burden, or funds frozen in uncompleted investment projects, totaled 750 billion zlotys in 1980, and the combined commitment of investment funds, or the full value of planned outlays of implemented investments, was estimated at about 1.2 trillion zlotys. If the ratio of frozen outlays to value of annual outlays was 1:1 in 1975, in 1979 it was 1:1.7. During these same years, the ratio of outlays indispensable for completion of begun investments to annual outlays was 1.98 and 3.02, respectively. This deconcentration brought about a reserve of equipment, which up to the last quarter of last year had not been conveyed for assembly, amounting to 50 billion zlotys, and the equivalent of 44 percent of this equipment was imported from the second payments area [capitalist countries].

### B. The maneuver of freezing investment and reallocating outlays. A stimulating factor.

B1 -- freezing investment outlays by delaying carefully selected investments, estimating that the combined value of the delaying investment should fluctuate between 160 and 200 billion zlotys.

B2 -- conducting a maneuver consisting of transferring half the funds indispensable to the continuation of the delayed investments in 1981-1982 to the budgetary reserve and gradually using them for noninvestment purposes, and reallocating the other half of the released funds for investment in the following three basic directions;

- agriculture and industry which directly services agriculture -- 30 to 40 percent of the disposable funds;

- works which protect and secure the close investments -- up to 10 percent of the funds;

- outlays connected with savings in consumption of raw and other materials, energy, etc. (e.g., insulation of buildings, combustion processes, replacement of transmission lines to reduce electric power losses, combatting corrosion, and many others) 20 to 30 percent of released funds;

- food and services industry -- about 20 percent of the funds;

- reserves for unexpected and undefined a priori expenditures.

The reallocation list given is general and by way of example. The scenario must anticipate and program amounts based on a multi-variant calculation of requirements and costs.

Other elements of the scenario--omitting amounts and reasoning--appear to be:

On the inhibitor side:

3. Growth in capital-intensiveness of investment due to the necessity to protect the natural environment (10 to 12 percent increase in outlays is assumed, or the cost-estimate value of these expenditures), mechanization and automation of technological processes, mechanization and chemical development of agriculture, purchases of licenses and know-how, growth in prices and inflationary spiral (also covering import), and accessibility in the field of raw materials investment to geologically and locationally more difficult natural resources.

4. Faulty material structure of the economy.

5. Investment pressure existing in the current system of planning and financing investment and disastrous investment cycles and inefficiency.

6. Import-intensiveness of investment.

7. Faulty producer-goods prices, scarcity of rents of land, etc.

On the stimulating factor or condition side:

C. Changes in ratio of new and modernization investment in favor of the others, so that their share in 1982 would not be less than 40 to 45 percent and would continue to grow.

D. Changes in the basic relationships of investment policy, i.e., to finally break the dogma of supremacy of the resources of group A in favor of group B industry, services and agriculture, and within the framework of agriculture to abandon the principle of supremacy and socialized favoritism so damaging to private farms.

E. Applying a principle of self-financing of the development of economic organizations and a new system of crediting investments, without regard to their size and nature.

F. Change in the system of planning and balancing investments, etc.

Within the framework of this scenario, particular importance is attached to a technique which reduces the incompatibility of internal plans by coordinating delayed investments with:

-- the rate and scope of investment works not delayed and calculated in part (if in total, then these investments also would have to be delayed) for servicing the delayed investment,

-- orders for equipment placed abroad, engineering licenses or patents,

-- "released" materials and engineering supplies, related to plans and balances on delayed investments,

"released" amounts of demand for electrical energy and fuels, both for the construction phase and the later utilization phase, reduced by the energy and fuels necessary for works protecting the delayed investment,

-- "released" demand for raw materials and co-production deliveries in the production phase of future installations, whose construction was delayed for a specified time,

-- a reduction in employment in the investment phase and "released" human potential and equipment to conduct the maneuver of accelerating other installations,

-- a reduction in employment and the wage fund, together with the services planned for the future operational phase,

-- the size and structure of production which will not take place because of investment delays, and the costs of undertaking such production in active plants or in international cooperation and commercial exchange,

-- the balance and possible export-import balance, meaning with the "release" of pressure for import of supplies for future production and with the "losses" in future planned export which will not take place because a given investment was delayed.

There are more such component elements in the coordinated "gains and losses" account. I wanted here just to give an idea of them and to call attention to the fact that there are techniques that are excellent for this purpose. But it is necessary not only to know them but how to use them.

The solution to the crisis is a strategy with many unknowns, implemented under conditions of great uncertainty and attainable with the understanding that this strategy will not be, for it cannot be, implemented in a social Shangri-la. It requires vision, boldness of thought and quick decision, simply determination in acting and boldness in entering into social conflicts, for without consumption and inflationary "sacrifices", there is no strategy for solving the crisis. And action is necessary now, immediately, or even sooner. But who will take this risk? Who will have enough courage, initiative, resoluteness and authority?

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ANTI-CRISIS STAFF FOR ECONOMIC PLANNING CONSIDERED

Warsaw TRYBUNA LUDA in Polish 28 Jul 81 pp 1-5

[The first version of the 1982 law on planning]

[Text] Our Own Information

Changes in the planning system were previously discussed by Team II of the Commission for Reform Matters. They will be published in the coming weeks after additional remarks from it's members are reviewed.

Matters of equal difficulty remain to be coordinated--a shift from the accepted concepts to the legal parlance of the planning law, as well as prompt establishment of a method for working out the national socioeconomic plan for the coming year that does not contradict the ultimate solutions adopted in the assumptions of the reform.

The second half of Monday's deliberations by Team II for planning matters was devoted to the latter problem.

The issue is especially difficult when it is considered that the 1982 plan is being worked out under exceptional conditions--a large deficit of raw materials, market goods and everything that is derived from imports. It is also known that the regulations adopted for implementing the plan for the next year--a year that is to be a transition period for instituting reform--will be evaluated by the work force of plants, and all of society as a test of the authorities' desire to carry out extensive reform.

In compliance with the government's program for overcoming the economic crisis, in the coming year absolute priority will be given to: food and means of agricultural production, medicine, items of personal hygiene, clothing and goods for young children and youths, energy and energy-type raw materials and export production.

It is envisaged, therefore, that there will be a need to implement special "operating programs." In order to apply the ideas with optimal results, it is important not to continue the directive-type methods which were applied on a broad scale as dictated by the situation. An alternative among others, is to



change from a system of organizational-unit [plant and equipment] distribution of scarce goods--distribution of goods per ministries, associations, enterprises and the like--to a system of distribution of goods for chosen goals. This would be consistent with the spirit of reform although it would be organizationally difficult.

One of the proposed organizational variants envisages, for instance, the appointment of a special anti-crisis staff which would distribute goods in short supply to the enterprises which would provide the most optimal, documented tenders for their use in top priority production.

It is important to know what is available in order to distribute. Therefore, as it was emphasized in the discussion, a strong balance of basic raw materials, fuel, market goods, foreign currency, work force and the like will be of major importance in working out the plan for next year as well as the following years.

A proposal was also discussed to establish wage control in the event that enterprises become independent, labor productivity decreases and the inflationary curve rises.

During the first portion of the meeting, members of the Team for Planning Matters along with members of Team X for Matters of Self-Government and Legal Bases for Functioning of the Economy evaluated the first version of the planning bill prepared by the Team X. It was decided to appoint a joint working group to prepare a revised version of this draft.

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END

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17 Sept 1981

